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On the Feeding of Infants

SUGGESTIONS FOR INFANT FEEDING.

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During the summer months a healthy infant should be fed less often. If a three hour interval has been maintained during cool weather, the interval, during a hot spell, should be lengthened so that a feeding is given once every three and one-half or even four hours. More water should be given between feedings. This water is necessary to assist in perspiration, to aid diuresis, and to act as an antipyretic during a hot spell. Water is as important as food, and too great stress cannot be put on this point.

The tolerance of the infant for fat must be carefully studied. If milk containing 4 per cent. of fat (whole milk) is ordered, and vomiting or frequent eructations result, such symptoms can be relieved by lessening the fat content, and using milk from which the cream has been removed, such milk being called skimmed milk.

Skimmed milk or its dilutions will frequently be better tolerated in the hot months than any other form of food. Sugar should not be added to food during fever. If fever exists and the infant refuses its feedings, the same may be sweetened by the addition of saccharine one-half grain to a quart. When vomiting and fever exist then the tolerance for carbohydrates is lessened. In such cases even barley water or rice water may be a disturbing element. Skimmed milk diluted with an equal quantity of water will be well-born in such cases. In children over one year if gastric symptons exist during the summer, junket made by curdling skimmed milk will prove beneficial, small quantities, cooled, and fed by spoon every two or three hours is nutritious and unirritating.

We should always bear in mind that if fever is present the power of absorption is lessened because the secretory functions of the glands is interrupted. There is consequently a frequent stagnation of the gastro-intestinal contents causing irritation. Such mechanical irritation aided by fatty acids provoke diarrhea. Our indication therefore is to give large quantities of alkalies, lime water, bicarbonate of soda, bicarbonate of potassium, and calcined magnesia should be remembered. We must always bear in mind that if an acute febrile process exists, that a large dose of castor-oil should be given, and that the stomach demands rest. More harm is done by overtaxing the stomach, and forcing an infant to feed than by any other means.

Fever Management.—During the hot weather we should aim to give:

First—Sufficient nutrition to sustain life.

Second—To supply food without increasing fever.

Third—To so arrange the food elements that gastric disturbances are not caused thereby.

What are the chief disturbances? They are vomiting, loose, green, or curded stools containing mucus; at times blood and mucus. There is also flatulence with belching and distension of the abdomen. There is also fever and intense thirst, in rare instances due to stagnation of the gastric contents which may give rise in some instances to coprostasis. As a rule the weakness (atony) of the gastro-intestinal canal shows itself by a deficiency of the internal secretions. This is most marked in the glandular secretion of the intestine and results in the stagnation of fecal matter. If fever is present and we have such stagnant stool, the flushing of the rectum will bring away hard, dry, and usually round scybalous masses.

If skimmed milk does not satisfy the craving for food during the summer months, then junket or cream cheese should be given. The junket should be made, as previously stated, from skimmed milk only. Fruit and fruit juices are contraindicated. The active principle of tea being astringent (theine) I usually order the same given in liberal quantities to quench thirst and for its astringent effect.

When a tonic is indicated one of the best drugs to use is nux vomica. This will restore tone, besides stimulate peristalsis.

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THE IMPORTANCE OF A RIGHT START IN INFANT FEEDING.

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The writer is impressed with the fact that success in the management of the nutrition of the infant demands close attention to detail and that control of the nutritive processes for one or two months of the year is of doubtful value. But upon the other hand there are certain periods that distinctly exceed all other periods in importance.

After the birth of the infant the most important period of its nutrition is the first month. If there is the right start, the succeeding months find the problem becoming successively easy of solution for as the infant increases in age and strength, it increases in digestive capacity.

But a wrong start, no matter how slight its immediate consequent results may seem, means prolonged difficulties at the best and this is often punctuated by acute and more or less serious trouble. A wrong start commonly results in gastric dilatation, functional faults, pathological changes in the digestive tract and subsequent change in other parts, and the formation of vicious habit that is difficult to combat because of the infants immaturity and incomplete control. Of the mild chronic nutritional conditions with their acute exacerbations which are so common in later infancy, the foundation has most often been laid in the first month of life.

It does not take many days of fermentative digestive disturbance or overfeeding to acutely dilate an infant's stomach, but the consequent chronic state takes weeks or months to correct.

It does not take much to excite vomiting early in life, but once started the tendency is strongly toward continuance in spite of suitable adjustments of the diet.

It does not take long to effect pathological change which will persist through infancy, and affect the whole metabolism.

It is a simple matter through the disregard of what may seem minor details to establish a vicious digestive habit which will tax all of your skill to correct.

It is hardly possible to exaggerate the importance to the infant of its digestive care during the first months of its life.

From the very beginning the key note of all infant feeding should be regularity. Regularity must be the dominant factor, no matter what the condition of the infant or the composition of its food and must be continued throughout infancy. It should apply with equal force to those allied factors which so markedly influence nutrition in early life—as sleep, the bowel function, outings, and periods of mental quiet.

The numerous, clean-cut and thoroughly established advantages of breast feeding need no reiteration here. But the proper establishment of breast feeding is commonly a problem of adequate care of the expectant mother and therefore is a problem of the general practitioner and not of the pediatrist. A very large percentage of mothers who cannot nurse their offspring are incompetent not because of mere deficiency in the milk or its composition, but because early and adequate care has not been given to the proper development and equipment of the breasts and nipples for service. Attention in this regard must antedate the birth of the infant by months, although much may be accomplished in a few weeks.

The percentage of infants whose digestive organs are crippled in the first month of life is exceedingly large; much larger than at any other period. And with crippled organs, the basis is established during the first month for nutritional faults that show and persist in the succeeding months; sometimes slight; sometimes grave; but in most instances preventable.

The writer realizes that it is a most difficult task for the practitioner busy with all kinds of problems to master the details of infant feeding and it is just this situation that has lead to so much confusion.

Under the circumstances it is an easy solution to instruct the mother to use one of the proprietary foods and follow closely the instructions on the label. Proprietary foods occupy a distinct place in the feeding of infants and each one of them has its own virtue so that for the feeding of a particular infant the selection becomes as much of a problem as the proper modification of milk. In general however, the proprietary foods are most useful as temporary measures to tide over a particular crisis in the feeding and are not well suited for long continued use. Therefore with the use of one of these foods should be coupled the clear instruction that its use is not to be indefinitely prolonged.

In a large proportion of instances the administration of a proprietary food has been through the advice of some one other than the physician and its use is brought to his attention through the onset of some acute or mildly continuous digestive or nutritional fault. When this occurs, it is unwise to immediately change the food because despite the digestive or nutritional fault rapid change may be accompanied by more acute symptoms. Gradual substitution is a safer measure and one that is more readily acceptable to the infant's digestive capacity and the parent's notions. Gradual substitution is usually a matter of from ten days to three weeks according to the digestive capacity of the particular infant.

It is not sufficient that the infant gain in weight and yet that is the commonly accepted standard of the nutrition; weight is but one element and a food cannot be judged by considering that alone.

What we aim for is symmetrical development. Weight, important as it is as an indicator of the nutrition is only one factor which has been given too large a place as a single and complete standard of the infant's nutrition. There are other elements as important and the comfortable digestion, adequate muscular tone, physical activity and mental vigor of the infant should be considered along with mere increase in weight.

In a brief paper the writer cannot go into detail upon many points but in sacrificing completeness for brevity, let us consider some of the main causes of digestive disturbances in breast fed infants during the first month.

When the breast milk is insufficient the infant remains long at the breast, frets when removed and gives evidences of hunger before the completion of the period between feedings.

Vomiting, regurgitation and colic usually accompany overfeeding from abundant milk supply and as acute dilitation is readily produced, vomiting becomes persistant and habitual and the infant does not gain. This is no indication to stop breast feeding, but the period at the breast must be shortened. Weighing the infant

before and after nursing will show what quantity of milk is being taken.

When the fat percentage is high in breast milk there is usually diarrhoea with straining and watery, green stools. Vomiting quickly supervenes and fat globules may be detected in the stool and vomitus with a low-power microscope.

Low fat results in poor nutrition, retarded gain in weight and usually constipation.

Curds in the stool associated with more or less marked flatulence are evidence of increased proteid and the milk may be diluted by giving plain water with sugar of milk, or water sugar of milk and a relatively high fat milk mixture immediately before the breast feeding. This may be done until the mother's habits can be corrected sufficiently to influence the breast milk.

When the quantity is sufficient and the infant exhibits no marked evidences of disturbance, but merely fails to thrive. the milk will be found to be deficient in both fat and proteid.

Under no circumstances should breast feeding be given up, when it is possible to modify its deficiencies by supplemental feedings of modified milk or the proper diluents.

I have spoken somewhat at length upon this because it is so common to wean the young infant who shows early digestive disturbance, in spite of the ease of correction when the cause is understood.

It might seem as though this paper was a plea for breast feeding—in part it is. But its object principally is to emphasize to the general practitioner—the one who has control of the earliest period of the infant's nutrition, the relatively great importance of this period. Knowing that he is soon to have the problem to meet, it is a simple matter for the general practitioner and obstetritian to prepare himself for it. This preparation can take adequate cognizance of all of the modifications which are injected into the problem by economic, social, industrial and other conditions and is therefore the most promising in its results.

It is a period of great possibilities for good or harm—for the establishment of proper or improper care—for the institution of sane and adequate or of shiftless methods of feeding.

And as the feeding of infants is largely an individual problem because all babies differ and the conditions that surround them in early life are so varied, the real solution of the problem is not in the hands of the pediatrist, but of the family physician.

And as has been stated previously, the foundation is commonly laid during the first month of the infant's life for nutritional and digestive conditions that add materially to the mortality and morbidity of later childhood.

The Cost of Pasteurizing Milk.

With a properly designed and properly operated plant, the average cost of pasteurizing milk is $0.00313 a gallon, and of cream $0.00634 a gallon, according to tests recently conducted by the U. S. Department of Agriculture. These tests also show that the "flash" process, by which milk is raised to a temperature of 165° F. and kept there for a moment only, is more expensive than the "holder" process, in which milk is maintained for 30 minutes at a temperature of 135° to 145°. The "holder" process requires 17 per cent. less heat than the other, and, in addition, there is a saving on the expense of cooling. For hygienic reasons also the department recommends the "holder" process.

HAND FEEDING. BRIEFLY CONSIDERED.

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There is no *system* nor has there yet been discovered or invented a *food* by which or with which babies may be artificially fed with success. Passing over the etiology of weaning, which is none the less important and interesting, and given a baby in early infancy which must be fed artificially, this ought to be successfully accomplished—and it should be successful from the very beginning and not after two or three or more months. The impression has gotten abroad and taken root to altogether too great an extent that this is always an easy matter. Early weaning has become popular in some quarters for this reason as well as because it is so readily acquiesced in by the physician. The popular idea that early weaning and subsequent successful feeding is easy is due to the large measure of success which has followed careful investigations and correct deductions, and the painstaking practice of both. In all conscience breast feeding should be insisted upon and no physician should be guilty of agreeing to an artificial diet when a baby is thriving on human milk. There should be some sort of professional penalty for such an one, or better still it ought to be impossible for any woman to find a physician willing to commit what would amount to a crime should a failure result.

The fact that a baby on anything but human milk is being fed artificially should never be lost sight of. That so many have been fed artificially with success has had a tendency to make us all forget its artificiality and the laity too often thinks of cow's milk as a *natural* diet for a baby simply because it is milk.

Given a baby then, who must for any good and sufficient reason be fed artificially what shall be done to maintain that baby's normal rate of growth and increase in weight? A baby's food consists of fat, carbohydrates, protein, salts and water, having certain physical characteristics and bearing certain relations to each other and separately as well as collectively to the infant. A brief consideration of these elements and relations it is hoped will be of interest.

Fat.—Fat has nearly twice the heat producing power of proteins or carbohydrates and therefore has most to do with maintaining body heat and supplying the layer of fat covering the bodies of all well nourished babies. Found in milks in the form of an emulsion the fat globule is the important element. In milk from cattle bred for the butter value of their milk, as Jerseys, Guernseys, etc., the fat globule is larger and of greater viscosity—such milks should be avoided for infants. The milk from a herd of common kine will have a more easily digested fat globule and be more constant in fat content from day to day. The digestion of the fat globule should be carefully watched and especially at first. While a fat intolerance is acquired from an early misuse or abuse of fat in the dietary, some infants undoubtedly take care of it more easily than others. Small soft curds are fat curds. A stool presenting a *sheen* when spread on the napkin or better still on a piece of manila paper contains fat in some form—neutral fat, fatty acid or soap. On manila wrapping paper the fat may be discerned coming through on the under side, having been absorbed by the paper. The easy

and rapid method of Talbot for demonstrating fats in stools is recommended. A microscope, the proper staining material, some acetic acid and a Bunsen burner is all that is needed.

The constipation of babies with too much fat in the dietary producing soapy stools and the loose slimy stools containing fats and fatty acids are to be remembered. In using home skimmed-milk (dip off the cream, never attempt to pour it if you would have a low fat) we may consider the fat content as about one per cent. Do not forget that an eczematous face may have a too high fat back of it and that the treatment is to lower the fat as well as to apply an oinment. Only milk from the mechancial separator may be considered fat free. The best and the most accurate method in the home of obtaining our fat content is by means of gravity cream. This may always be reckoned as at sixteen per cent. fat if from a quart bottle which has stood from four to six hours at a temperature above fifty (60°F.—12°C. —is best), or until the cream line is well formed. There will be on a four per cent. milk about six ounces of this cream, which should be dipped to perhaps half an inch below the line (never poured). We discard the middle eight or ten ounces and use the lower pint or twenty ounces, which may be considered as containing one per cent. of fat. While these percentages are not accurate if the same method is invariably followed, changes when they are made are always relatively the same.

Carbohydrates.—The carbohydrate element seems to be the easiest handled by the baby. Mother's milk contains nearly twice as much lactose as cow's milk and as they are, chemically at least, identical we are assured that our total carbohydrate may be as high as seven per cent. at any age. That there are physical differences there is no doubt, and there may well be some difference in digestibility. Milk sugar should be perfectly pure and recrystallized and above all thoroughly sterilized before feeding. In order to have correct percentages maintained have it measured carefully from a measure (the average family has no means of weighing) of known weight capacity, i. e., a level tablespoon contains two and six-tenths drams. First get the amount (percentage) in the milk, or skimmed milk and cream used, then add in the carbohydrate in the form of starch in the gruel and then add enough dry sugar to total from five and one-half to six and one-half per cent. If we could all agree to use the metric system throughout, these percentages would be much easier to figure.

The writer still believes despite its cost that lactose is "best by far." Nature in her long and perfect processes of evolution has supplied carbohydrate of animal origin for her vertebrate young, ergo, that form of sugar should be best. Why then attempt to use other sugars except for cause? Saccharose and maltose are being used by good authority and they have their place. Maltose cannot be used pure being too expensive and practically unobtainable, and in combination with dextrin unless the dextrin is low in proportion will be found to be constipating. It is best administered in the form of so-called malt extracts. Lactose is the sugar "that is more suitable for the development and maintainance of the intestinal flora than any other sugar," and if Nature and Prof. Morse urge the use of lactose that ought to be enough for the rest of us. Milk sugar may and does come to us containing dirt and germs but these things can be easily obviated.

When proprietary foods are being used it is not so much what is being used as how much of what. Is the food largely sugars or starches or is it made of both? Avoid the formulae on the box, feed the individual baby on his individual formula and always know the total carbohydrate content which is just as important as the other elements. Not infrequently have I found fourteen or fifteen per cent. total carbohydrate strength in a baby's food with the result that might be expected and such mistakes are usually found in connection with the use of a proprietary food. If you would not get into trouble keep the carbohydrate somewhere near nature's limit—seven per cent. Until the end of the third month more than seventy-five hundredths of one per cent. of starch (0.75%) will not be well borne. A cereal can never be over-cooked. They are discovered not infrequently under-cooked, especially when cooked in a double boiler. It is a good plan if the patient's family are doing it for the first time for the physician to go to the house and make up a day's feedings himself in the presence of the person who is to do the work and then to return the next day to see if his instructions have been correctly carried out.

Protein.—Although the protein in human milk averages one and one-half per cent. to four per cent. of fat, babies seem to be able to take care of it in cow's milk more easily than they do the fat despite the hard curd as compared with the soft flocculent curd of mother's milk. Is this not due to the present day method of always using from the first some cereal gruel for its mechanical action on the curd? Skim-milk has been fed successfully where a fat intolerance has appeared yet not many years ago it was this curd which was supposed to be the principal offender, and fats in early infancy were advised in the proportion of three to one of protein. The large bean shape fairly hard curd is of protein origin. When a low fat and an easily digested protein is indicated whey or whey and cream will supply the need for a short time although in very young and undersized babies the caloric needs may for a long time be supplied by this mixture. Remember that the casein in the added cream is not all soluble proteid as in the whey. Buttermilk is an example of straight fat free protein milk but should not be used as possibly not entirely wholesome on account of bacteria which were in the cream before souring. Better have it made by using sterilized skim-milk ripened by adding a definite known ferment (lactic acid bacilli). In "eiweiss" milk we have a still higher protein content. "Protein milk" as used to-day is the washed and ground curd to which has been added buttermilk and water, or it is used sometimes without the buttermilk. It is essentially a laboratory milk on account of the difficulties met in preparing it.

There does not seem to be any very clear indication for the use of koumyss. I believe that the food elements of koumyss should be as carefully proportioned as in any other artificial diet and that the ripening is simply another form of fermentation which adds alcohol as well as lactic acid to the baby's food. The day of feeding koumyss to any considerable number of babies has passed. The writer's feeling is that with the clear indications of which we are now cognizant, the scientific application of our knowledge cannot be applied to koumyss as an infant food. One to one and one-half per cent. of alcohol is usually present if used the day after being made. Seven to nine per cent. of alcohol have been found in some samples. It should be condemned for even the lower percentages mentioned, al-

cohol being as we all know not a stimulant. I have fed it warm to drive out the gas and some of the alcohol, feeling that to feed ice-cold koumyss containing alcohol and gas to a little baby was little short of criminal. That some koumyss fed infants do not fare ill is because they are getting a food they can digest and not because they are getting koumyss, i. e., a baby who can be fed on koumyss can be better and more scientifically fed on a properly modified milk. Koumyss being the most artificial of all known things put into babies' stomachs stands at the bottom of the list, and not at the top.

Alkalinity.—Cow's milk although slightly acid does not require that an alkali be added—perhaps because it is so slightly acid. Lime water therefor has disappeared from our artificial infant dietary. The alkalinity of human milk is not due to calcium hydroxid anyway. In vomiting feeders it is useful up to fifty per cent. of the milk and cream but as it means adding a watery diluent as well, sodium citrate is preferred (added in the form of crystals or powdered) because it does not interfere in any way with any gruel of known starch percentage. The latter may be used up to a grain to the ounce of milk and cream when all the digestion may be thrown on the intestine by opening the pylorus after the alkaline food enters the stomach. It is more easily handled, much less expensive and is rarely required in amounts greater than one-half a grain to the ounce of milk and cream. The gruel is retained while using the alkali (which should be reduced as rapidly as possible) so that we may still depend upon its mechanical effect should the alkali be insufficient, especially during its reduction from time to time.

There are so many good reasons why cow's milk should be pasteurized and so few poor reasons why it should not be that it is safe to say that we should always after the day's food is made up, either pasteurize or sterilize it—no matter how good the herd from which it comes, nor how carefully it has been produced. Then remember that spores are not killed and it is therefore to be used within twenty-four hours.

In conclusion let us recollect that feeding cases are made and not born, and that home modification is by far the best method we can use, making as it does for more direct control by both family and physician as well as for better appreciation of the fact that the baby is being carefully and therefore scientifically fed. And does not the trouble and time connected with home modification tend to popularize breast feeding?

Finally do not let us get so artificial with our hand-fed babies that we forget the normal natural standards of the Infants (the one who does not speak.)

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Rate of Ovarian Disease in Sterility.

George W. Kosmak is of the opinion that the question of sterility in an otherwise healthy woman must depend on an aggregation of factors rather than on a single lesion and that in every instance the entire pelvic contents must be subjected to careful study.

In a certain proportion of cases, however, the removal of an ovary which is diseased undoubtely contributes to increased function in the other, as evidenced by an improvement in the menstrual conditions and the greater possibility of subsequent pregnancies. It would appear as if the question of sex was not dependent on the side from which the individual ovum is derived and that whether the left or right ovary is removed the proportion of sexes in subsequent children is about equal.—(*N. Y. State Jour. of Med.*, December, 1912.)

THE TREATMENT OF SUMMER DIARRHEAS IN INFANCY.

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For the proper treatment of the summer diarrheas of infancy there is necessary a proper understanding and appreciation of the etiologic factors involved in their production. The most important of these factors, we realize today, are heat and humidity and the sugar content of the milk. Surely, it is not to be denied that bacteria play a part in the production of this important condition, but save for the relatively infrequent, specifically infectious enteritides, bacteria do not initiate the disease process, but secondarily set up fermentative and toxic conditions, which manifest themselves clinically. Faulty feeding methods, particularly faulty proportioning of the food ingredients, likewise play a responsible role, but a role nowise peculiar to summer disease. Also among the most frequent causes of diarrhea at all seasons is parenteral infection—otitis media, bronchitis, coryza, cysto-pyelitis, furunculosis, etc., which are almost invariably accompanied by looseness of the bowels.

The literature on the effect of summer heat and humidity on the production of diarrhea is so large as to render it unnecessary to dwell at length on this point. Suffice is to say that other things being equal, heat itself produces diarrhea in infants. This heat may be due to summer temperature, it may be due to overclothing, or it may be due to improper housing. The heat effect itself is increased by humidity—the humidity of summer atmosphere, the humidity of steaming kitchens, and of moist laundries. Thus the first indication in the treatment of summer diarrhea is the mitigating so far as possible of the condition of heat.

The baby suffering with diarrhea should be placed as soon as possible in a cool environment. The room itself should be ventilated and if necessary, darkened. During the evening, the porch or the roof should be resorted to. Parks, beaches or the boat deck may swing the balance in favor of the little one's life. It is especially important that the clothing should be reduced to the minimum consistent with comfort. In the hot sweltering days a diaper and shirt are sufficient for the baby's attire. In the presence of cold feet stockings are permissible. Flannel binders are unnecessary and harmful except before the sloughing off of the cord in the new born. Flannel petticoats have no place in the attire of the baby in summer. These latter strictures, of course, do not necessarily apply to the undernourished baby with subnormal temperature.

The work of Finkelstein and his school have abundantly demonstrated the role of the carbohydrates in the production of dyspeptic or diarrhoeal states in infants. In diarrhea conditions the clinical picture is largely determined by the fermentation of the sugars, and the absorption of the products of intestinal decomposition. There may result a mere looseness of the bowels or any degree of diarrhea up to and including the fulminant condition of alimentary intoxication. Accordingly, the next indication after the avoidance of heat is the elimination of sugar from the diet of the disturbed infant. Of the various sugars used in infancy, maltose, in the form of maltose dextrin is least likely to lead to fermentative disturbances or the production of intoxication symptoms, but this also should be withdrawn and then gradually restored to the diet, in summer diarrhea. It is the immediate employ-

ment of the full quantity of sugar on the resumption of milk feeding, as previously taught, that is most frequently responsible for the inability to check diarrhea early. A failure to appreciate the effect of sugar is maybe the most frequent cause of the long continued subacute or chronic summer diarrhea. Properly treated, a summer diarrhea should never run more than an acute course.

It is a matter of common knowledge, that while raw milk is laxative in its tendency, boiled milk has an opposite or constipating effect. With proper feeding mixtures the ingestion of boiled milk is less likely to be followed by the presence of lumps or curds in the stool. Boiled milk also is sterilized milk, and the exhibition of sterile milk lessens the secondary bacterial action within the intestines. The third principle in the treatment of summer diarrhea is therefore, *boil the milk.*

In a previous communication,* I have described a simple method for the feeding of infants. Briefly, instead of complicated percentage formulae, simple milk dilutions are employed—in general, for the first six months of life, one-half milk and one-half water to which is added 5 per cent. of sugar, preferably malt sugar. From the sixth month on, two thirds milk and one third water, plus 5 per cent. sugar, are used. After gaining has ceased on this mixture, generally between the ninth and the twelfth months, the baby is placed on whole milk. The amount of milk mixture given in the twenty-four hours is limited to one quart—an infant's caloric requirement can always be covered within this limit—and the baby's ration is divided into five feedings, which are given at intervals of four hours. In the first few weeks of life, sometimes one third milk is used and six feedings are given instead of five.

In the treatment of diarrhea these same dilutions are employed—the diarrheal infant is given the milk dilution corresponding to its age, or the dilution corresponding to the preceding age period—only the sugar is eliminated, the milk is boiled, and instead of five feedings, six feedings of somewhat reduced quantity are given. Often it is necessary merely to eliminate the sugar and to boil the milk. As the symptoms subside the milk mixture is increased again to the normal quantity and the sugar is gradually resumed, adding one or two per cent. each day or every other day, until the normal five per cent. is reached. The rapidity with which the normal amount of sugar is resumed depends upon the course of the recovery. With the recurrence or persistence of diarrheal movements, the increase in sugar is stopped or is again entirely eliminated, and gradual addition is begun again when the symptoms warrant. But the following is a cardinal point never to be overlooked in strengthening the temporarily restricted food—*never increase the quantity and the quality of the food at the same time.* If the milk mixture is increased, for instance, from four ounces to five ounces per feeding one day, the amount of sugar is not to be increased until the next day.

In the treatment of diarrhea a preliminary purge is generally indicated. Castor oil is probably the best cathartic for the purpose, largely on account of its subsequent constipating effect. In the presence of vomiting, milk of magnesia is preferable.

A prolonged period of starvation is unnecessary and in the case of weak and atrophic infants generally harmful. It is necessary to starve only for a period long enough to permit an emptying of the alimentary tract—generally six, eight, or twelve hours. A longer starvation in atrophic infants is almost invariably fatal. There is no necessity for a twenty-four or forty-eight hour course of barley water before using the diluted milk. The barley water period is itself virtually a starvation period, although the barley may furnish a complicating factor because of its fermentation.

Astringents are rarely, if ever, necessary—occasionally, however, chalk mixture, bismuth, or tannigen are useful in cases where the response is not sufficiently prompt.

During attacks of diarrhea, fruit, vegetables, broth and cereals should be eliminated.

Of course, the foregoing applies to the diet of the bottle-fed infant. One need scarcely ever be concerned by diarrhea in the breast-fed infant if one adopt the attitude of not meddling with the diet. The avoidance of heat, a dose of castor oil, the skipping of one or two feedings, and then placing the child at the breast for ten minutes every four hours, causes the condition rapidly to pass off. The breast fed child should never be weaned because of summer diarrhea. Many a baby has had the foundation of a long nutritional disturbance laid in removal from the breast because of diarrhea. Unless interfered with, the stool of the breast-fed infant will take care of itself. Incidentally, let it here be emphasized that breast-fed infants contribute in much smaller degree to summer infant mortality than do bottle fed infants—a potent argument against the unnecessary weaning of the baby. No system of artificial feeding ever devised equals in effectiveness and safety maternal nursing.

Of course, in all summer diarrheas, it is necessary to consider the role of parenteral infection—and one must treat such conditions present as bronchitis, coryza, otitis media, furunculosis, cystopyelitis, etc.

The treatment of summer diarrhea may thus be summarized briefly as follows: (a) Avoidance so far as possible of heat and humidity; (b) boiling of milk; (c) elimination and *gradual* restitution of sugar; (d) employment of simple milk dilutions.

The methods outlined above have been employed by me for three years in a large dispensary material, as well as in private practice, with practically uniformly successful results. The methods described apply to the treatment of simple summer diarrhea, but not to the condition of alimentary intoxication (Finkelstein) in which human milk or albumin milk are indicated.

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*Levy: Simple Methods in Infant Feeding.—*Jour. Am. Med. Assn.,* June 22, 1912.

Carcinoma of Liver in Children.

O. L. Castle of Kansas City gives the entire literature on this subject, there being but 43 reported cases in children under 16.—(*J. A. M A.*)

The symptoms are as variable as the location, extent and toxicity of any malignant disease. The cases reported show in general the following:

Cachexia, anæmia, gastric or right hypochondriac pain; tumor in abdomen; icterus when bile exits are occluded; acites when portal or lymphatic obstruction occurs; terminal fever.

Nearly all of the deaths were described as being caused by cachexia and asthenia.

The duration is reported indefinitely, from fourteen days to one and one-half years.

Castle's patients died on the sixteenth day after operation, from symptoms of acute enteritis.

HINTS AS TO THE FEEDING OF INFANTS DURING THE SUMMER SEASON.

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The manner in which the baby is fed has much to do with its health during the summer months. Although excessive heat, especially when coupled with humidity, has, together with other factors, a most important influence upon the incidence of death and ill-health among infants at this season, the diseases of the digestive tract comprise such a large part of this ill-health and death rate that the importance of judicious feeding during hot weather cannot be overestimated.

Several important points should be kept constantly in mind in connection with the diet of infants in summer. The infant needs weaker food and less food than in winter. It also needs, even more than in the cold season, clean milk, and, in very hot weather, pasteurized, sterilized or boiled milk, and always one or the other if the cleanliness and purity of the milk is not entirely—like Caesar's wife—"above reproach." Furthermore, both in summer and winter, the infant's food should be simple and easy of preparation. The busy practitioner, and the equally busy mother and nurse, have not time for mathematical calculations and algebraic equations. Moreover, they are not necessary. The percentage method of feeding (while it has served a useful purpose in enabling us to give a certain percentage of proteids, fats, sugar and other carbohydrates in a fairly accurate manner, and has thus facilitated the fitting of the food to the child) is not a perfect substitute for the breast-milk, as its distinguished originators at first fondly supposed. However closely the percentages approximate those of woman's milk, it is still cow's milk—designed by nature for the calf's stomach, and not for the infant's. One of the most significant proofs that percentage feeding has not solved the problem of artificial feeding is the readiness with which the profession adopts and tries out every new method proposed, as the popularity and undoubted value in certain cases of Keller's malt soup, Finkelstein's Erweiss (?) milk, and other preparations abundantly attests.

It would appear to be entirely unnecessary to insist that the very best and safest food for the infant during the hot season is human breast-milk, were it not for the fact that there are still physicians, nurses and parents, who, from their practices, evidently think otherwise. Babies are still too frequently weaned for trivial causes. Recent investigations have shown no diminution in the capacity for maternal nursing, and most—the majority of women, in fact—can nurse their babies until the sixth or ninth month, if encouraged and assisted by those to whom they look for medical guidance. When the supply of human-milk is not adequate for the infant's needs, much may be done to increase it. How this may be accomplished need not detain us now, except to mention the very great value of Southworth's concentrated yellow corn meal gruel* for increasing and improving the mammary secretion.

To return to artificial feeding: It has been already stated that when the weather is warm, the infant requires less than its usual supply of food. It must not be forgotten in this connection, that cow's milk is not its natural aliment; hence more danger is possible from over- than under-feeding, much more indeed, than if it were fed upon breast-milk. It is far better that the babe be somewhat hungry, and not gain in weight, than that it fall sick. The weighing of babies and the importance made of it by physicians and popular books for the guidance of mothers is, I am convinced, a fruitful source of over-feeding and of consequent illness; if the infant remains well, stationary or slight gain in weight is of no importance, especially in summer, and is certainly no indication for increasing the food. In ordinary summer weather the usual amount of food may be permitted, but during the hotter spells the quantity of each feeding may be cut down from 1-5 to 1-4 or more. Much depends upon the individual child. The same end will be attained more effectually, since the appetite and thirst will be thus satisfied, by lessening the strength of the food and altering its quality, particularly by altering some or all of the elements of the food.

This point is of the utmost importance: The amount of protein may be lessened, and, to a less degree, the sugar; while the fat, it will generally be found wise to diminish more than either. (These remarks apply to well infants, not sick ones, it must be remembered.) The fat of the cow's milk is now generally regarded as the element least tolerated by the human infant. This seems to be especially the case when the baby's digestion is weakened, as it is prone to be in hot weather. When diarrhea, ever so slight, supervenes, this becomes imperative. Holt has shown quite recently that much more fat is present in diarrhea stools than when the infant is in a state of health.

The success of buttermilk, Keller's malt soup, condensed and malted milk is, in a measure, due to their low fat content. It is a wise precautionary measure, therefore, to keep the fat at two or three per cent. rather than at the usual four, during the hot season. At the first intimation of intestinal disturbance, prompt reduction of the fat to one per cent. or less (.50%) (that is by resorting to skim milk), with a slight reduction of the protein, will often correct the disturbance without resorting to stoppage of the milk altogether, and the customary castor-oil. Mixtures in which the fat is equal to or lower than the protein may be readily secured by employing skimmed milk of different strengths, obtained by dipping off varying amounts of cream from the top of a bottle of milk and then shaking up the remainder. The following table will be found useful in this respect:

1	oz.	dipped	off	from	the	top	of	qt.	of	milk	of	4%,	gives	3.50% fat.
2	"	"	"	"	"	"	"	"	"	"	"	"	"	3. "
3	"	"	"	"	"	"	"	"	"	"	"	"	"	2.50 "
4	"	"	"	"	"	"	"	"	"	"	"	"	"	2. "
5	"	"	"	"	"	"	"	"	"	"	"	"	"	1.50 "
6	"	"	"	"	"	"	"	"	"	"	"	"	"	1.40 "
7	"	"	"	"	"	"	"	"	"	"	"	"	"	1.25 "
12	"	"	"	"	"	"	"	"	"	"	"	"	"	1. "
24	"	"	"	"	"	"	"	"	"	"	"	"	"	.50 "

To those who are not followers of the percentage system, or who will not be hampered with calculations, it will be sufficient to reduce the amount of cream in the mixture, or to remove more from the top, if a top-milk mixture is being employed, or to remove one or more ounces of cream from the top of the bottle—in the case of whole milk combinations—when lower amounts of fat are desired.

It is not maintained that all infants have difficulty in digesting cow's milk fat during the warm weather. Very many babies have absolutely no trouble in this respect. The point desired to be emphasized is that in hot weather—speaking generally—both the fat and

*Two tablespoonfuls yellow corn meal, 1 qt. water; boil 3 hours and strain.

protein should be kept low, the fats especially; that this is imperative in babies of weak digestive capacity; and that on the first sign of intestinal disturbance, material reduction of the fat (and also the sugar) will often act as a direct preventive measure. A caution should here be sounded as to the danger of long-continued non-fat feeding in infants. The carbohydrates and fats are not interchangeable. The former cannot, for any length of time, take the place of the latter; and in any case when a fat-poor dietary is continued long, other fats, such as cod liver oil, should be administered by the mouth and by inunction, and attempts should repeatedly be made to teach the infant to digest fat by the addition of cream to the food in five or ten drops, with similar increases every fifth day.

The sugar content of the infant's dietary in summer need not be disturbed unless distinct indications arise; such as acid and fermented stools, excoriating the buttocks, and, occasionally, the regurgitation of a sour, clear and watery fluid. Under these circumstances the sugars and occasionally other carbohydrates (starch) should be reduced materially or omitted altogether, to be cautiously resumed after the disturbance has disappeared. Malt sugar (dextri-maltose, or the semi-solid extracts of malt) is less apt to ferment than milk or cane sugar; hence it is preferable under the conditions just mentioned and when a baby has a tendency towards acid fermentation. It has not been my experience that the sugars cause the injury attributed to them by German observers, except in a temporary way. As a consequence I have not feared to use them in summer, and in intestinal disturbances unless the contra-indicating factors above described are in evidence. Indeed, when for any reason the fat has been reduced a corresponding increase of the sugars is frequently absolutely necessary, if the infant is not to lose weight. For this purpose maltose (dextri-maltose or one of the semi-solid malt extracts) is preferable to cane or milk sugar. Although believing that the injurious effects of sugar are only temporary, readily relieved by their withdrawal for a time, it is easy to conceive that if allowed to continue, they may invite actual injury of the mucosa, and thus pave the way for serious infections.

That the milk consumed by babies should be clean, both in summer and winter, goes without saying; it is a proposition that needs no proving, being a matter of common knowledge to both physician and layman. It is also not necessary to insist that not only should milk be clean, but that it must also be kept clean and cold, even if it is "certified." In summer we believe that all milks, certified and uncertified, should be pasteurized and sterilized; the latter, in very hot weather. When pasteurization is employed, it is not necessary to use a special instrument; boiling for a few minutes is quite sufficient, or simply raising the milk to the boiling point. This admonition applies to sick and well babies alike, especially to the former, viz.: That all milk for babies should, in summer, be pasteurized; and in diarrhea, when there is any question as to purity, it should be sterilized or boiled. The only drawback to this procedure is the constipation which sometimes follows its use; though, of course, this is not a valid objection to its being used. The possibility of scurvy from the use of heated milk must be borne in mind, but there seems to be much diversity of opinion as to this point. The French and German observers, particularly the former, do not recognize scurvy as a frequent sequence of boiled or pasteurized milk; besides, when it is employed, the simultaneous administration of orange juice (½ oz. daily) will do much in preventing the appearance of this intestinal disorder.

It is my belief that, since the gospel of pure, clean milk has been preached so vigorously, the incidence of summer diarrhea has in some degree increased; hence I regard the heating of milk in summer as a preventive measure of very high order.

In conclusion it may be said that in feeding babies in hot weather, as at all other seasons of the year, rules and suggestions cannot take the place of brains and experience. No hard and fast lines can be laid down, and the experience of one man differs greatly from that of another; thus exemplifying anew the aphorism of the Father of Medicine that experience is "fallacious and judgment difficult." Notwithstanding this, the principles enunciated in this paper, in a rather desultory manner, it must be confessed, have been of value to the writer; are the result of his experience and are consequently presented for what they may be worth to others.

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Comments on Infant Feeding

Faults and Fallacies in Infant Feeding.

According to J. S. Fowler, M. D., F. R. C. P., in the *Practitioner's Encyclopedia of Medicine and Surgery*, some of the misconceptions which consist in connection with this subject are as follows:

1. That it is possible to devise a substitute food as good as human milk. The more we learn about the subject, the more clearly does it appear that it is impossible to prepare artificially any food which is more than a rough approximation to human milk. Milk is something more than ordinary food; it is a specific food, and the milk of every species of animal is specifically adapted to the needs of the young. The variations in the composition of the milks of different animals are nature's adaptations to her own ends, and probably besides the variations we know, others quite as important escape us entirely. Notwithstanding much painstaking research, nobody has yet discovered what particular component of cow's milk renders it indigestible by many infants.

2. That fresh milk, as obtained commercially, is superior to boiled milk. It is a widely-spread delusion that boiled or sterilized milk is not a good food for infants. It is objected that it is less digestible, less nutritious, less antiscorbutic, and finally, that it is an "unnatural" food. The true position is as follows: If we had a milk supply above suspicion, and could get pure, clean milk, free in particular from tubercle bacilli, distributed to the consumer in such a way that there was neither a likelihood of its becoming sour nor a risk of its having been contaminated, boiling, sterilizing, or cooking in any way would be unnecessary. At present we are far from this ideal, and the raw milk of commerce is a dangerous food. Cooking does not render milk less digestible, but the reverse; it diminishes its nutritive value very slightly, or, if the milk has been heated in a closed vessel so that no scum forms, not at all. Boiling does not make the milk of the cow a more "unnatural" food than before. There remains, then, only the question of scurvy. Unquestionably, boiled milk can cause scurvy, but it seldom does so, and the risk is easily guarded against. It is an incomparably less serious risk to run than that of infecting an infant with tubercle bacilli from raw milk.

3. That "one cow's milk" is a desirable food. Owing to variations in the composition of the milk of the cow, it is best to use the mixed milk of a herd, which will maintain a more uniform composition.

4. That the more milk a child takes the better. Overfeding is more common than under-feeding. On an average a baby requires about one-seventh of its body weight of milk daily. Some children thrive on one-tenth; others require one-fifth; more should not be given.

5. That large quantities of cream are beneficial. A mixture for a baby should not contain more than three to three and a half per cent. of fat. If it contains more, fat indigestion is likely to ensue.

6. That failure to thrive shows that the child needs more food. This may be the reason, but it is much more likely that the food is otherwise unsuitable. Too much may be being given; or fat, or (especially in older children) carbohydrate may be deficient.

7. That vomiting during the first few weeks of life in a breast-fed baby is due to the mother's milk disagreeing. It is often a sign of congenital hypertrophy of the pylorus, and this should be excluded before weaning the infant.

8. That a child suffering from acute diarrhea will starve if milk be stopped and water or albumin water substituted. The first thing to do in a case of acute diarrhea is to stop milk completely, in every shape and form.

9. A list of common faults: 1. Too frequent feeding. During the second month the interval should be at least two and a half hours, and from the third month three hours. 2. Imperfect cleansing of bottles and teats. Use the simplest pattern of bottles, and never allow milk to dry in them. If the bottle is not to be thoroughly washed after a meal, rinse it out and allow it to stand full of water until it is time to cleanse it. Teats should be rinsed after and boiled before use. 3. Allowing milk which has been boiled to cool slowly. It should be chilled under a tap as quickly as possible, and preserved, covered, in a cool place. 4. Allowing an unfinished feed to stand over for future use. 5. Frequent changes of diet. If the food has been intelligently chosen it should not be altered without good reason until it has had a week's fair trial. Constant changes lead to nothing but confusion. 6. Too bulky feeds. The average rule is an ounce for every month, up to the eighth. 7. Giving starches too early. Nothing but milk is required until the seventh month. 8. Under-feeding towards the end of the first year. This is nearly as common as over-feeding in the early months. By the ninth month a healthy child begins to use his muscles a great deal, and requires starches—the energy producers of the food—in fair quantity. Cereals should be added to the milk about the seventh month; by the ninth or tenth the infant should be encouraged to chew bread and butter, or crust, and ought to have a saucer of porridge, or its equivalent, once or twice a day. Towards the end of the year eggs should be given. It is a mistake to restrict a child of ten or eleven months to milk and thin gruel.—(*Arch. Pediatrics*, May, 1914.)

Feeding the Normal Baby.

Henry F. Keever, of Harvard Medical School, lays down some elementary rules for the feeding of infants that are worthy of reproduction. He believes the best food for an infant during the first seven or eight months of its life is breast milk. Even a very little breast milk is often of service in enabling the infant to assimilate its bottle feedings to better advantage. If breast milk is not available, then some modification of cow's milk must be used.

The milk from Jersey and Guernsey cows is too rich in fat, and contains certain elements in the fats which are not easily assimilated by the infant. Holstein and Ayrshire milk is best adapted for infants and the milk of a carefully selected herd is better than the milk from one cow. Human milk contains 4 per cent. fat, 7 per cent. sugar, and 1.50 per cent. proteid. Cow's milk contains 4 per cent. fat, 4.50 per cent. sugar, and 3.20 per cent. proteid. Comparing these, element for element, we find that the percentage of fat is the same. The fats in cow's milk are, however, more volatile than in human milk, and therefore less easily assimilated. Human milk contains 2.50 per cent. more lactose than cow's milk. The greatest difference is in the proteid, and here we find a marked quantitative and qualitative difference. Human milk contains 1.50 per cent. proteid; cow's milk, 3.20 per cent. proteid. This quantitative difference is still further marked by the fact that human proteid consists of 1-3 casein and 2-3 whey, while cow's proteid consists of ¾ casein and ¼ whey. As the whey is the easily digested part of the proteid, it is readily seen that the proteid content of human milk is far more easily assimilated than the proteid of cow's milk.

The usual milk modification is made of cream, skim milk, water, or barley water as a diluent and milk sugar. Creams vary according to the percentage of fat they contain. Gravity cream—that is, the top of the bottle to the cream line, usually the top six ounces in a quart bottle—contains 16 per cent. fat. Centrifugal cream contains 32 per cent. fat. There are three methods of obtaining cream:

1. Pouring off the top 4, 6 or 8 ounces.
2. Dipping.
3. Siphonage.

Of these three, probably the latter is the more accurate, though the first is the simplest. It is well to remember that after a quart of milk has stood four hours, the top 4 ounces contain 20 per cent. fat; the top 6 ounces, 16 per cent. fat; the top 8 ounces, 12 per cent. fat, and the top 11 ounces, 10 per cent. fat.

In the preparation of the formula, the water should be boiled and cooled before adding to the milk. If boiling water is added to milk, it scalds it and ultimately tends to produce scorbutus.

The milk sugar should be put in solution in about 2 ounces of boiling water, as it is much more soluble in hot water. After the formula has been prepared, it should be placed in the separate feeding bottles, stoppered with cotton plugs, and put on ice. The nipples should be kept in a saturated solution of boric acid and boiled once a day.

One of the most commonly used diluents in the preparation of formulas is barley water made of 1 ounce barley flour to 1 quart of water. Boil twenty minutes in a double boiler, strain, add enough water to make a quart. This makes a 1.50 per cent. solution. The advantages of barley water are:

1. It helps to break up the casein curds in the stomach.

2. It adds to the food value of the mixture. Babies ordinarily do not possess the ability to digest starch until the fifth or sixth month.

Whey is one of the most easily digested milk products, and often is assimilated easily when other foods cannot be tolerated. Its food value is relatively low, containing no fat, 5 per cent. sugar and .9 per cent. of proteid. It is made as follows:

Add 4 teaspoons liquid rennet (essence of pepsin) to 1 quart skim milk; heat to 105° F.; let stand until the curd forms; break up the curd with a fork and strain several times through a napkin; heat to 155° F. to destroy the enzymes. If this is not done, and cream is added to the whey, the cream will curdle. One quart of skim milk will make about 24 ounces of whey.

Lime water is added to milk modifications to delay stomach digestion, causing most of the food to be digested in the intestines. In certain cases, rendering the stomach reaction alkaline lessens the vomiting, gas and colic.

In those cases where it is considered desirable to pasteurize the milk, it may be done as follows: heat to 140° F.; hold at this temperature for twenty minutes; place on ice. Pasteurization at this temperature kills the pathogenic bacteria, but does not destroy the enzymes, which are needed for digestion.

If it is desired to sterilize the milk, it may be done by bringing it to the boiling point, 212° F., and holding there for five minutes. This process kills certain enzymes which are essential for complete assimilation.

The most common sources of error in making up milk formulas are the following:

1. Contaminated Milk. This is especially dangerous in hot weather. All milk for infant feeding should come from tuberculin-tested cows in inspected dairies. Absolute cleanliness in respect to hands, utensils, bottles, etc., must be observed in handling the milk.

2. Errors in the fat percentage of cream. One must be sure that the percentage of fat in the cream used is the one that is required. A common error is the belief that the richer the cream the better for the baby.

3. Errors in the fat percentage of milk. All the foregoing figures are based on a 4 per cent. fat in whole milk.—(*Modern Hospital*, April, 1914.)

Preparation of Common Infant Foods.

Robert B. Hunt, of Boston, gives various simple, time and labor saving methods for preparing several of the common infant foods.

Barley Water.—Three-quarters of an ounce of barley flour is added to one quart of cold water and boiled for twenty minutes. Then add water to make up the original amount, and strain the contents through several thicknesses of gauze. The flour, when placed in water, becomes lumpy and no amount of boiling will break up these masses. This difficulty may be overcome in two ways: first, a small amount of water may be added to the flour and thoroughly mixed, thus making a paste which will be nearly free from lumps. The second, but better, method is as follows: Partially submerge a fine wire strainer in the cold water to be used, pour the flour on the water in the strainer and stir gently with a spoon until the flour is in solution. The flour is quickly dissolved and the barley water will be absolutely free from lumps.

Whey.—Heat fat free milk (skimmed) to about 100° F. Add enough rennet or essence of pepsin to form a junket-like mass. Stir well to break the mass as finely as possible and allow to stand for ten minutes. Pour off the top and strain through several thicknesses of gauze. If the whey is to be added to milk or cream, it must be heated to 157° F. and immediately cooled to prevent the further action of the rennet.

Buttermilk.—A pure culture of lactic acid bacilli is added to skimmed milk in an earthenware dish, and allowed to stand at about 70° F. for twenty-four hours, or until the casein is coagulated. Stir vigorously in a churn, or with a spoon or egg beater until the curd is very small, and then push the contents through a fine wire strainer with a spoon. If the buttermilk is too thick add a small amount of water. When the buttermilk is once made, about four ounces may be used as the inoculating agent for the next supply to be made. In this way the original culture may be made to last from six to eight weeks. The quality and action of the product made will vary but little. Add the four ounces of buttermilk to the fresh milk, incubate and follow the above outline. Sometimes the milk will not coagulate, although it may smell sour. Stirring gently with a spoon will often produce coagulation in a few minutes. The fat present will rise to the top and when coagulated appears as a brownish yellow scum which may be removed before the curd is broken up. Pure cultures may be obtained at any biological laboratory and are by all means the safest and surest, especially when the child is concerned.

Eiweissmilch.—One quart of whole milk is heated to 190° F. for three minutes and then cooled to body temperature. Add essence of pepsin enough to coagulate all of the casein. Break up the curd with a fork or spoon and allow to settle. Heating the milk to a temperature of 190° F. changes the character of the calcium salts so that the curd formed by the addition of rennet will be soft, flocculent and non-adherent. The essence of pepsin is used instead of stronger rennets, so that the curd will remain soft. The precipitated casein is allowed to settle and the liquid part is decanted. Straining the curd through linen or a wire strainer is impossible because the curd is of such consistency that the meshes of the strainer are quickly obliterated so that no drainage takes place. After all of the liquid has been removed and only the curd remains this precipitate may then be put into a wire strainer and the remaining portion of the whey allowed to drain off. This dry curd is then pushed through a fine wire strainer by means of a spoon, into one pint of buttermilk and one pint of water. After the curd is strained into an empty dish, the particles quickly adhere and you have gained practically nothing by straining. This precipitate must be strained into liquid in order to make use of the colloidal action so that these particles will remain separated. The buttermilk, water and curd is then strained again, put into glass jars or bottles and kept on the ice.

Precipitated Casein.—The process of making precipitated casein is exactly the same as that of eiweissmilch, with the exceptions that fat-free milk is used instead of whole milk and no buttermilk is added.

Milk Sugar.—Milk sugar does not dissolve readily in cold water, therefore, if the sugar be added to milk just before it is to be taken, the child does not get it at all if the bottle is not emptied or gets it all at once in an undissolved condition with the last half ounce, or so, of the feeding. To do away with this difficulty it is better to boil the sugar in a small amount of water, thus insuring a dissolved and sterile mixture. Milk sugar becomes contaminated in the manufacture, and a bacteriological examination frequently shows the pres-

ence of many bacteria. Aerogenes Capsulatus, the organism which causes fermental diarrhea, has often been found in the sugar, and several cases of intestinal infection have been traced to this source.—(*Boston Med. and Surg. Jour.*, Vol. clxix, No. 21.)

Unusual Type of Acid Intoxication in Infants.

Isaac A. Abt, of Chicago, thinks the term "acid intoxication" has been used somewhat loosely. In infancy and childhood it is produced under varying clinical conditions. It is generally agreed that acetone in small quantities may occur in the urine of normal children. Acid intoxication results from incomplete fat and protein metabolism, due to functional or organic diseases of the liver or to carbohydrate starvation.

Abt calls attention to a particular and peculiar type of which he has seen nine cases. The illness usually occurs in large, robust, previously healthy infants. In some cases the children show a stationary weight curve for several weeks before the onset. If fed at the breast, they show signs of hunger and dissatisfaction with the food because the breast milk is scanty or of poor quality. Some of the infants were artificially fed for weeks or months before the onset of the illness.

The disease is ushered in by gastro-intestinal symptoms, consisting of more or less diarrhea, and nearly always vomiting. The patients are at first restless and show moderate febrile reaction during the first days of the illness, rarely exceeding 101°. Later on the temperature tends to be lower, averaging between 99° and 100°. On the second or third days there is some abdominal distention, dyspnea, with rapid respiration and an increase in pulse-rate. The respirations are labored, and the accessory muscles of respiration show marked activity. The liver is markedly enlarged, the edges are plump, and the surface firm. The urine soon contains albumin, and hyalin and granular casts, without blood, with acetone and diacetic acid. In one of my cases leucin and tyrosin were also found. The urine contains no sugar.

About the third day stupor is noted, which gradually deepens into coma. The blood shows no pathological changes, the leukocytes vary between 9,000 and 12,000, and the differential count shows no variation from normal. Toward the close of the disease intestinal atony may occur. As a result, no feces or gas are passed voluntarily, nor can any intestinal evacuation be induced by mechanical or therapeutic agents. Abdominal distention increases progressively, and cyanosis and dyspnea are marked. Unconsciousness continues, and occasionally vomiting persists until the end. The reflexes are present and normal. There are no symptoms of cranial nerve involvement, and usually no pulmonary complications. When death takes place it usually occurs in four or five days after the onset.

In the literature one finds scant mention of this extreme form of acid intoxication in infancy. Possibly some of the severer forms have been described as cases of acute yellow atrophy of the liver, though in none of our cases was jaundice present. The liver remained constantly large, not atrophied, as in cases of acute yellow atrophy. The presence of leucin and tyrosin is not pathognomonic for acute yellow atrophy, since both substances may be found in small amounts in urine in extreme degenerative diseases of the liver, such as afebrile jaundice with slight hepatic enlargement, leukemia, typhoid fever, and other diseases.

From the urinary findings, from the symptom-complex, and from the almost universally fatal termination we are justified in assuming that some profound intoxication has taken place in the infant's organism. The symptoms which this disease group represents have suggested resemblance to the so-called "milk sickness," a condition which has been observed throughout the pioneer portions of the United States where cows became ill with the so-called "trembles," and human beings who partook of milk from such animals or ate of their flesh fell ill with a diseased condition which resembled, in some respects, the cases which we are describing. Human beings ill with this disease show languor, loss of appetite, and extreme constipation, usually marked nausea; the breath has a peculiar, sweetish odor. The pulse is quick, full and soft, and the patients have little or no temperature; drowsiness and coma are not uncommon, and irritability, convulsions, and marked delirium may occur. Notwithstanding the resemblance, these cases were for the most part breast-fed infants by healthy mothers. These cases occurring frequently toward the close of the period of lactation lead us to ask whether there was some quantitative change in the breast milk sufficiently marked to produce the condition of starvation. Thus in the third case mentioned the baby had not gained weight for four months before he came under observation, and for three weeks previous to admission into the hospital he had appeared unable to satisfy his hunger while at the breast. For this reason he had been nursed every hour or hour and a half, whereas previously he had been nursed every three hours.

Abt asks if a starvation acidosis could have resulted, or was there some deficiency in the component parts of the breast milk which could have led to a severe intoxication?—(*Am. Jour. Med. Sci.*, January, 1914.)

Vomiting in Children.

J. P. Parkinson, of London, in writing on difficulties in pediatric diagnosis, says vomiting is one of the most common symptoms in children. In infants, it is often due to overfilling the stomach with food, to gastric or intestinal indigestion, or to obstruction. It very commonly occurs at the commencement of pneumonia, scarlet fever, or other infections in children, taking the place of the rigor of the adult. It is a common, early symptom in acute nervous diseases, such as meningitis, and may be due to toxic substances in the blood, such as uremia, or to cyclic vomiting. This latter is by no means infrequent and it is not as well known as it should be. There are periodic attacks of vomiting, apparently without cause. The attack begins suddenly, and vomiting occurs every hour or two; headache, a coated tongue, and great thirst are present. The child gets very exhausted before the cessation of the attacks, which happens usually in two or three days. The breath and the urine contain much acetone, and there may be albuminuria. The history of previous attacks is important, and the absence of blood and mucus from the stools excludes intussusception. Vomiting of blood in children is nearly always due to bleeding from the nose or pharynx, as epistaxis does not always occur these parts should be examined. Hematemesis may, however, be a symptom of purpura, scurvy, or hemophilia, and I have seen it due to gastric ulcer, though this is very rare in young children.—(*Practitioner*, No. 550.)

General Scientific

PROSTATECTOMY.*

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Gentlemen—The two old men whom I have just operated on afforded me an oportunity to demonstrate again the technic of the operation of prostatectomy. You have seen me perform this operation very often of late, but we are especially fortunate in having two patients with enlarged prostates on whom I could demonstrate the technic of both the suprapubic and the perineal operations on the same day.

Having completed the operations it may be profitable to spend a few minutes in discussing some of the practical points in the preliminary and subsequent care of these patients. The treatment before operation is of the greatest importance and I make it a point never to operate on an enlarged prostate without due and sufficient preparation of the patient. There are many small details to which we must attend and while in themselves they are perhaps not very important, taken in the great mass they make for success or failure.

Usually the candidates for prostatectomy present themselves to the surgeon with a bladder which is more or less chronically distended with urine. I have already warned you of the danger of emptying a fully-distended bladder at one sitting, a practice which always leads to urinary fever, hemorrhage, cystitis and not infrequently to urosepsis, followed by death within a week. The bladder should be gradually emptied, about a week being taken to rid the organ of the residual urine. Formerly I passed a catheter three or four times a day and drew off a little urine each time, but on account of the traumatism, pain and bleeding which the frequent catheterization induces I find it better to pass a woven silk catheter, tie it in the bladder and control the flow of urine by means of a cork in the end. In this way the frequent passage of the catheter is avoided and the permanent instrument is very well borne in every instance.

Certain surgeons advocate doing a prostatectomy in two stages. One objection to the two-stage operation is the fact that the bladder must of necessity be entirely emptied at the first operation which is the very condition we wish to avoid.

The most frequent cause of death following a prostatectomy is suppression of urine, and this is accounted for by the cessation of the kidney function and may be due either to the extra strain caused by the effort to eliminate a quantity or ether, or, as is more frequently the case, the sudden relief of the back pressure caused by the too sudden emptying of a chronically-distended bladder; this relieves the back pressure from the kidneys and throws them into a state of acute congestion; their function is suspended and death from uremia follows.

Great effort should be made to guard against this fatal complication by emptying the bladder gradually.

During this time the patient should be kept in bed and large quantities of water should be ingested to keep up the activity of the kidneys. Urotropin and benzoate of soda should be exhibited for their sterilizing effect upon the urine.

After the four to seven days which are required to empty the bladder, the bladder should be kept empty for several days by a permanent catheter and washed once or twice daily with nitrate of silver solution. At this time the patient should be encouraged to sit up in a chair and move about moderately.

In these old men the first effect of passing a catheter, even though the bladder is not fully emptied, is to cause a rise of temperature, to which we give the name of urinary fever. This is only temporary and subsides after two or three days.

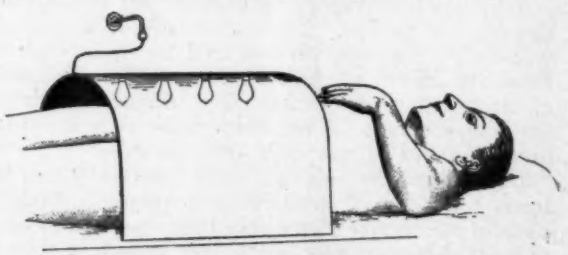
One guide to the safety of any operative procedure is the state of the urine and we find almost invariably that at first, before drainage is instituted, these patients have polyuria, a low specific gravity and possibly 70 or 80 ounces of a urine with a specific gravity of 1008 or 1010. Under the effects of drainage of the bladder the quantity is reduced to 40 or 50 ounces and the specific gravity rises, showing a better functional activity on the part of the kidneys.

Another useful guide to the safety of any operative procedure is the phenolsulphonephthalein test of Rountree and Geraghty, which, taken in connection with the other urinary findings, affords a good index to the functional activity of the kidneys.

The time of preparation is variable. Sometimes a week is enough in a case where the bladder is not overdistended, and in other cases I have spent a month in the preparation of patients by means of permanent drainage in improving the function of the kidneys before I found it safe to operate, but the time is not lost, for suitable preparation of these cases will often change a bad prognosis into a good one.

Of the causes of death after operation suppression of urine heads the list.

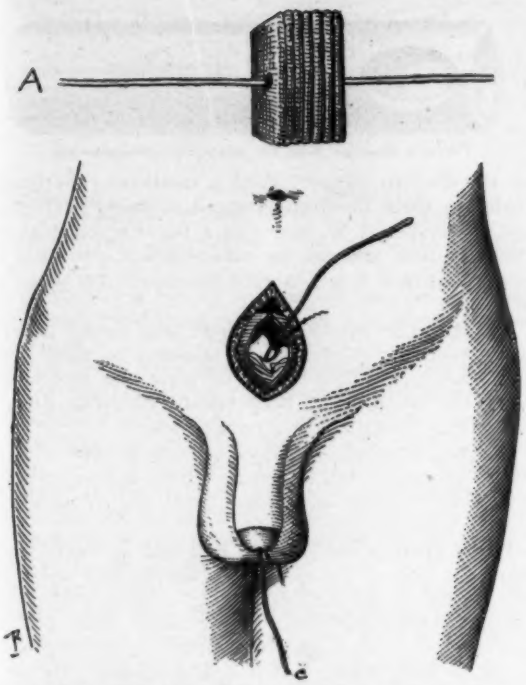
The effects of shock in these old men is not so great as it might be supposed. A new device which I have been using this winter has helped very materially in alleviating the shock. It consists of an electric baker which is made of a cradle covered with cloth, containing several incandescent electric lights. This is placed over the patient's abdomen, the lights are turned on and the bodily warmth is maintained over the abdomen and solar plexus. The blood instead of being allowed to settle on the internal organs, is brought to the skin, the internal congestion is relieved and the circulation is improved immediately. I consider it a very valuable adjunct to our post-operative treatment.



Electric baker for treatment of shock.

Hemorrhage should be taken care of on the operating table and can always be controlled by a tampon in filling up the cavity from which the prostate has been removed, or, if necessary, the whole bladder may be safely tamponed. Many cases do not require this tamponade of the bladder. Hemorrhage ceases spontan-

*Clinical lecture at Long Island College Hospital.



A. Tampon for packing cavity after suprapubic prostatectomy.
B. Tampon applied and drawn firmly into cavity by pulling on string "C."

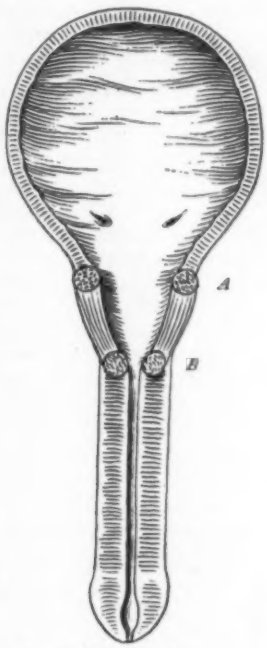
eously after the prostate has been removed, but now and then after a suprapubic prostatectomy the bleeding is so free that the tamponade of the bladder is required to control it. After a perineal enucleation we always apply gauze packing around the perineal tube.

One cause of death which sometimes occurs, but is fortunately rare, is pulmonary embolism, and there seems to be no way of guarding against this accident. It is caused by a dislodgment of a septic clot from the wound which is carried by the circulation through the lungs and there gives rise to symptoms closely resembling pneumonia.

In feeble old men with low vitality and impaired healing powers gangrene of the suprapubic wound and general sepsis are responsible for a fatal result in certain cases. This, to my mind, is one of the great disadvantages of the two-step operation for the patient is exposed to the dangers of gangrene and sepsis for several days before the prostate is removed and his time of confinement in bed is also prolonged. Since I have adopted the plan of using silver wire sutures and leaving them in until convalescence is nearly completed, I have had less trouble from sloughing suprapubic wounds than when I was in the habit of removing the stitches earlier. I believe it is very desirable to use a suture material that can remain indefinitely for the purpose of holding the wound together and preventing gaping and subsequent sloughing.

Another cause of death in feeble and debilitated old men is found in a general and gradual failure of all the vital powers. There is no organic lesion demonstrable, but the appetite, strength and vitality fail, the patient grows weaker and weaker every day and simply fades away.

In considering the late complications of prostatectomy incontinence of urine heads the list. This is more common after a perineal operation and may last for several weeks or even months, but yields in time and the patient, I think, always gets full control. Examination of the posterior urethra with the water endoscope of Wossidlo discloses the reason. In the healing process after removal of the prostate the entire posterior urethra is surrounded with a mass of infiltration which stiffens it and prevents it from closing at the mouth of the bladder so that the feeble sphincter vesicae has not force enough in it to close this funnel-shaped orifice. The patient then must depend on his cut-off muscle as the only safeguard against emptying the bladder and the cut-off was not intended by nature for such a purpose. It is always reinforced by the sphincter of the bladder; the cut-off yields from time to time and a few drops of urine escape. As the infiltration around the posterior urethra is absorbed, the sphincter vesicae again begins to contract and pull and close the orifice and when the



A. Sphincter Vesicae.
B. Cut-off muscle.

outlet of the bladder is no longer patulous, restitution of control takes place.

Stricture of the urethra sometimes follows a prostatectomy, particularly of the perineal variety, and we always make a practice of passing full sized sounds after convalescence is established to prevent any undue contraction.

Cystitis, which always exists before a prostatectomy, lasts for a few weeks afterwards, but yields even if no treatment is employed.

Annoying complications after suprapubic prostatectomy are the fortunately rare cases in which the suprapubic fistula persists. It is my practice to tie a permanent catheter in the urethra for a week, in from four to six weeks after the operation, if the suprapubic fistula seems sluggish in healing. This manner of directing the flow of urine away from the suprapubic fistula and putting the muscular fibres of the bladder at rest will cause a healing of the fistula in almost every instance. If, however, the patient objects to wearing a permanent catheter, daily applications of tincture of iodin to the fistula with close, tight strapping with adhesive plaster will sometimes cause healing, but ordi-

narily we must have recourse to the permanent catheter, which is really the sovereign remedy to cause these troublesome fistulae to close.

Now as to the choice of time for operating: I have already discussed that in these lectures, and on the question of early operation as against late operation, which means a catheter life, I have expressed my belief that if the bladder and kidneys are in good condition and the patient is in reasonably good health, an early operation is safer as the mortality of early operation is less than if you allow the patient to use a catheter and then finally when he comes to operation, as these patients practically all do, with lowered vitality, damaged kidneys and cystitis, his chances of recovery are much less than if he had been operated on at the beginning of his disability.

As to the choice of operation, between the suprapubic or perineal: I have already pointed out the conditions determining the choice of the route. If the prostate is high up, reaching up into the bladder, the suprapubic route gives easy access to the prostate. If it is low down it can be easily outlined through the rectum and can be taken out rapidly and quickly through the perineum.

In feeble old men, where great rapidity of operation is demanded, the perineal operation, if it is at all possible, is the one to be recommended and you will remember the old man 82 years of age, from whom a few weeks ago, I removed the prostate through the perineum in a very few minutes. On account of his age and much lowered vitality, a rapid operation was imperative and I had the pleasure of presenting him here at last week's clinic, just before he left for his home, able to empty his bladder completely and with his perineal wound entirely healed.

The anesthetic plays a very important role in these cases. Let me caution you not to drown the patient with ether. The ether which is taken into the blood must be eliminated and it throws a very heavy task on the kidneys, so much so in fact that sometimes it is impossible for them to do the work forced upon them, and suppression of urine follows.

The ideal anesthetic for these old patients is gas-oxygen anesthesia which you have seen Dr. Erdmann administer so many times with such skill and address. Where that is not entirely sufficient a small quantity of ether will help out in the action and we can thus avoid drenching the patient with quantities of ether.

Spinal anesthesia wtih stovain is today used in many of the genito-urinary clinics and it certainly has many advantages. My experience with it in prostates is too limited to speak authoritatively, although I have operated for other conditions with its assistance.

Passing now to the care of the wound after operation: I would like to first consider the method of treating the wound after a suprapubic prostatectomy. The suprapubic route certainly has a higher mortality than the perineal on account of the convalescence being slower, requiring from six to eight weeks for the wound to heal, and it demands more attention to the after-treatment on the part of physician and nurse. I feel that the use of silver wire sutures, which are left in until the wound is practically healed, is a decided advantage for they keep the wound close together and prevent it from gaping and there is a smaller space to fill in by granulation.

I use as a routine a large Freyer drainage tube. The object of using a tube of such large calibre is to permit the clots to escape. With a small tube the bladder strains to force them out, instead of being perfectly at rest, as it should be, but with a big Freyer tube they enter the tube and can be easily picked out with forceps. This tube is left in until the fourth day when it is taken out.

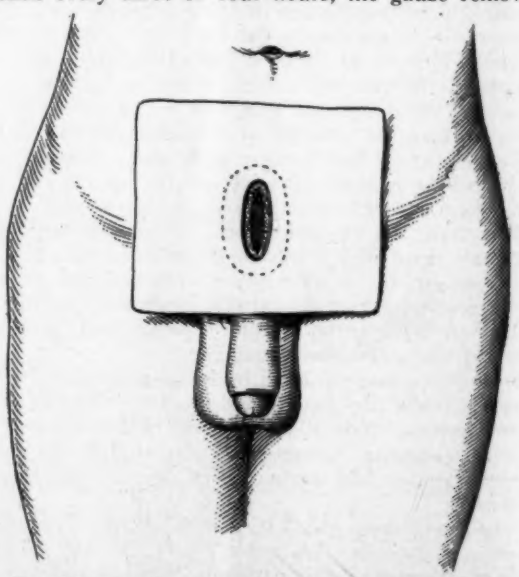
Freyer's drainage tube for suprapubic prostatectomy.

A perineal or urethral drainage tube should never be used, according to my way of thinking, in these suprapubic cases, for it is better to leave the cavity from which the prostate has been removed entirely alone so that it may granulate in a natural way.

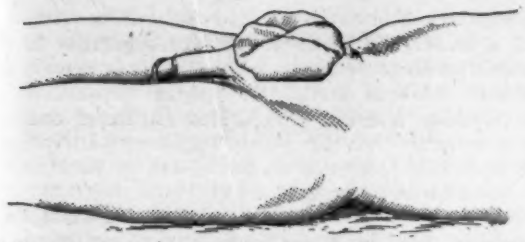
A gauze packing necessary to control hemorrhage is not an objection, but a perineal drain causes irritation, is very apt to cause an abscess, gives rise to cystitis and is to be condemned.

While visiting the Necker Hospital in Paris several years ago one of the assistants told me that when they first began to do the suprapubic operation they tried using the perineal drain at the same time, but they had so many complications and their death rate was so high that they abandoned it and depended only on the Freyer tube for drainage and that since they stopped using the perineal drain their death rate had been very materially lowered.

One of the great inconveniences of the suprapubic operation is the urine which flows over the patient's belly and causes great discomfort from being constantly wet from the excoriation and eczema which the irritating urine sets up on the abdominal wall. We have guarded against this in the last few months by using a very simple device which I now show you. It consists, as you see, of a piece of rubber dam with a hole in the middle. This is caused to adhere to the belly around the suprapubic wound with zinc ointment. Gauze is then put inside and the rubber dam folded over. The urine is soaked up by the gauze, the rubber dam is opened every three or four hours, the gauze removed



Funnel-shaped outlet of bladder kept open by infiltration surrounding posterior urethra.
Rubber dam apron for suprapubic drainage, open.



Rubber dam apron for suprapubic drainage closed and enveloping folded gauze over wound.

and fresh pieces put in and in this way the patient is kept perfectly dry and comfortable and his belly is not excoriated.

Of all the various devices for siphoning off the contents of the bladder and for continuous irrigation of the bladder I have no use, for I feel that the less interference there is with the bladder the better wound-healing we will have. For that reason I do not use irrigation of the bladder in these wounds unless there is an indication for it. I think that it is better to leave the wound perfectly at rest and allow the natural processes to go on undisturbed.

Sometimes after a week or ten days a rise of temperature takes place and by washing the bladder we remove a certain amount of pus and detritus which are being absorbed causing a rise of temperature. A few bladder washings stop the absorption, the temperature comes down and then the bladder washing may be either discontinued or kept on for at that time the wound cavity is granulating and irrigation can do no harm.

The treatment of the wound of the perineal operation is along entirely different lines. It is very simple and requires much less attention and care. I use as a routine a 34-French perineal drain made by Tiemann & Co., of soft rubber, with plenty of firm packing around it. This is taken out on the fifth day and the patient is encouraged to get out of bed in about a week.

Sounds are always used in these cases as a routine to prevent stricture.

To pass on to the consideration of the general after-treatment of these prostatectomy cases. It is highly important to get them quickly from the operating room into a bed in which are hot bottles. To avoid shock, the electric baker, which I have described, is used at once until the shock is passed, and the Murphy drip or colonic irrigation is begun as soon as the patient is out of the anesthetic. In order to be absorbed, the Murphy drip must be used correctly. If the salt solution is too cold. or if the flow is too fast, it is not absorbed, fills up the rectum and is rejected. The saline solution as it enters the rectum should be of body temperature and there are certain devices now on the market for maintaining it. The flow should not be over 20 drops to the minute, which is about what the rectum will take up.

The best diuretic which we have is water. That should be forced on the patient as soon as he can swallow.

Hypostatic pneumonia can be guarded against by turning the patient from side to side every two hours.

These are the general items of the routine treatment which we employ in these prostatic cases, but I find that each old man I operate on has a different train of symptoms after the operation. With one the kidneys are failing. With another stomach disorders predominate. Again, the heart action may be feeble, and oftentimes there is great mental depression and prostration.

To handle these cases most intelligently requires a wide knowledge of general medicine and general therapeutics and I always rejoice when I can associate myself with some general practitioner of broad experience who can aid and advise me in looking after the general details of sleep, diet, nutrition, stimulation and such matters as are within the daily experience of every man who treats medical cases, especially in the aged.

Perhaps the first question which the patient puts to us is, What is the mortality? What is the chance of a successful result? We can answer that by saying that if the selection of cases is carefully made and the patient has adequate preliminary and post-operative treatment, bearing in mind always what might be called the tripod of safety—preliminary drainage, rapidity of operation and the Murphy drip afterwards, the mortality is surprisingly low when we consider the age and condition of the patients.

Our records in the Long Island College Hospital show that in the eighteen months from Jan. 1, 1913 to June 1, 1914, I did prostatectomies on twenty-eight patients whose ages ranged from 57 to 82 years.

In this series there was only one death which could be attributed to the operation. That was in a man 77 years of age who died of cardiac failure, eleven days after the operation.

There was also one death from carcinoma of the stomach four weeks after a suprapubic prostatectomy and one death from valvular disease of the heart, which occurred suddenly, six weeks after a perineal operation, after the wound had nearly healed and he was about ready to be discharged from the Hospital.

But this low mortality was only obtained by the most careful attention to the details which I have just described.

32 Schermerhorn Street.

Exposing the Pelvic Portion of the Ureter.

John M. Birnie, of Springfield, Mass., employs this technic: With the patient in the Trendelenburg position a median incision is made beginning close to the pubic bone and extending upward, exposing the space of Retzius in the usual manner. No muscle fibers are cut, but the recti are retracted to either side. The point where the parietal peritoneum is reflected onto the bladder is noted and care taken not to open the peritoneal cavity. Starting at the bladder, the peritoneum is wiped away toward the median line separating it from the bladder and pelvic wall, thus exposing the ureter. With retraction one gets a complete exposure of the ureter and any necessary procedures may be carried out under the guidance of the eye. Drainage, if necessary, may be instituted through the original incision or through a separate stab wound.—(*Surg., Gyn. & Obst.*, No. 5, 1914.)

New Kidney Forceps.

F. C. Walsh, San Antonio, Tex. (*J. A. M. A.*), describes and illustrates a new kidney forceps which avoids undue pressure on the renal substance which may damage the organ or cause annoying hemorrhage. They are of a modified obstetric pattern and fitted with a Hodge lock. In delivering the kidney the traction exerted causes no compression of the kidney substance as the blades lock loosely over the kidney and any force is directed from above downward on the pedicle itself.

ADVANTAGES OF INSTITUTIONAL TREATMENT.

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In the clientele of nearly every busy practitioner of medicine, particularly in cities and larger towns, are always to be found certain patients who obviously cannot be treated to the best advantage in their homes.

The numerous disadvantages under which the physician labors in treating certain classes of cases at home are too familiar to require enumeration here.

Confronted with these difficulties, and having at heart the best interests of his patient, he wisely refers them to an institution where the obstacles with which he has had to contend can be overcome by the various and valuable advantages of sanatorium treatment.

Mental Effect of Sanatorium Life.—In the first place, there is a potent aid to amelioration in the mental effect upon the patient consequent upon a stay in a sanatorium, the very name of which suggests a return to health. The contemplation of a visit to a resort renowned for its healthfulness and beneficent influences often inspires the patient with hope of ultimate recovery from a prolonged and perhaps much brooded-over malady. This not insignificant factor should be thoroughly impressed upon the patient and emphasized by the physician, who must assure him that he will surely recover or at least be greatly improved by the care, diet, climate, treatment, etc., he will enjoy at the institution to which he has been referred.

It is of the utmost consequence that the patient should be induced to believe in the benefit of the treatment to which he is subjected. On the other hand, skepticism or hesitancy on the part of the physician frequently awakens an antagonism in the mind of the sufferer which only the utmost skill can dispel.

The atmosphere of a sanatorium should be one of hope and cheerfulness. From the medical superintendent to the bath attendant should come an inspiration to every patient.

It is becoming more and more evident, with a deeper knowledge of the etiology and progress of disease, that even the greatest disorders are in a measure subject to mental control. The malady may be incurable; yet, if a remnant of hope remain, the thought of the patient should be directed towards the hope of ultimate recovery. Particularly is this true of certain neurasthenic conditions, where frequently some persistent hallucination impedes functional strength and activity, and of chronic rheumatic affections. In cases where serious pathologic derangement is not apparent, a mighty leverage is available through timely suggestion and the salutary impress of the physician's thought upon the untoward brooding of the patient; and even in such cases as advanced arthritis deformans much can be done by the proper exercise of psychotherapy. Indeed, I should class this phase of therapeutic effort among the most promising aids to success in the treatment of disease, not only in sanatorium but in private practice.

The Value of System.—Another advantage of an institution is the systematic and scientific manner with which the various treatments are employed. Each day, at certain regularly specified times, they are administered—whether drug, hydrotherapeutic, electrotherapeutic, massage, Swedish movements, or physical exercise, and it is a universally accepted fact that regularity in the administration of remedies, as of diet, is extremely important. Without the almost constant supervision of the physician himself, or a skilled attendant, one can never feel sure that the desired regularity of treatment and systematic attention to meals will be observed in the home-care of the patient.

Advantages of a Trained Staff.—In the sanatorium the patient is under the constant supervision of a competent medical staff, and attended by trained nurses, which advantages will be readily recognized by both laymen and physicians. The practically constant attention of the physician, as found in properly conducted institutions, is desirable not alone for the purpose of rendering prompt assistance in case of emergency, but also that the progress of the case may be constantly observed, and the value of the treatment noted from day to day.

Moreover, the cases needing sanatorium treatment usually require such methods as can be successfully adopted only in institutions equipped with proper apparatus operated by experts. Here the nurses are skillful masseurs; and their faithful and experienced attention is of the utmost importance in thoroughly carrying out the details of a beneficial rest-cure.

In a good sanatorium the patient receives the benefit of a most careful and thorough diagnosis facilitated by conveniences not always accessible to the general practitioner. These include the laboratory equipment for the complete and careful clinical examinations requisite in every case of disease, such as the analysis of the urine, gastric contents, sputum, blood, faeces, radiographic work, etc. Of course these examinations can be carried out in private practice, but by far the greater majority of physicians do not possess the equipment or cannot devote the necessary time and attention to such matters; and the delay and expense of having examinations made elsewhere is sometimes annoying to both patient and physician.

Sanatorium Equipment.—If the general practitioner is at a disadvantage in respect to these analyses requiring a comparatively small equipment, how much more handicapped is he, when one considers the elaborate appliances with which all first-class sanatoriums are provided, for determining with almost mathematical precision the exact condition of each patient—dynamometers, to determine with accuracy the strength of each skeletal muscle group; ergographs to demonstrate the effect of various therapeutic measures upon the resistance of the muscles to fatigue—an invaluable instrument in neurasthenic cases,—spirometers to determine to a cubic inch the capacity of the lungs; sphygmographs, sphygmomanometers, tonometers, the *x*-ray, and the various electrical and other appliances for making accurate diagnoses, the repeated and intelligent application of which demonstrates with mathematical nicety the results of treatment, whether improvement or retrogression.

The preeminently essential reason for institutional treatment, however, is the fact that through its agency alone is found the necessary equipment for applications of the various hydro-, mechano-, and electro-, therapeutic measures, which obviously cannot be installed in private homes or even in the physician's office.

With a well-furnished hydrotherapeutic department under the care of skilled manipulators and attendants, the patient is assured of the remarkable beneficial results to be obtained from the simple application of water

or of mud baths. In all well-ordered establishments arrangements are such that the temperature, duration, pressure, and technique of the various hydriatric procedures are perfectly governed, so that the advice of the physician regarding the application of water, steam, or air, can be carried out with precision.

There is scarcely a disease in which some of the numerous applications of hydrotherapy are not of marked value, particularly in various chronic disorders. Indeed, in many cases, the chief reliance is placed upon hydriatric methods, very many eminent medical men being of the opinion that rheumatism and allied disorders, neurasthenia and certain other severe nervous diseases, can be benefitted more by these than by any other treatment. Yet hydrotherapy can be practiced satisfactorily and thoroughly only in well equipped and carefully conducted institutions.

In conjunction with this procedure, peculiarly available in a sanatorium, the numerous and varied applications of electricity may be utilized in a most complete and scientific manner, whereas, in a private office or in the home of a patient, these means could be but unsatisfactorily applied at best, on account of improper or incomplete apparatus.

Coupled with the above-named advantages must be considered the invaluable application of massage and the practice of medical gymnastics, and physical exercise, important features of every first-class sanatorium.

The detailed explanation of the varied employment of these remedial measures need not be considered here; their superior advantages will be evident to anyone who gives the matter thoughtful consideration.

The Influence of Change.—In the treatment of a great many cases of chronic constitutional or nervous diseases, a very important factor is the removal of the patient from the accustomed surroundings and home influences, which, however well intended, are almost invariably deleterious. Over-solicitous friends and relatives may retard the recovery of the patient by keeping his illness constantly before his mind. Usually such patients can be greatly benefitted by being removed to some pleasant remedial institution remote from the untoward influences of home life.

In such a sanatorium, business cares are soon forgotten amid new and pleasant surroundings. No sympathetic relatives or friends are there to constantly remind the patient of the worries and vexations incident to his accustomed vocation. For a successful recovery from neurasthenia and allied affections especially, this is of vital importance.

Another very important feature of sanatorium life is the establishment of regular habits of living. The patients are carried through the day in a systematic routine way which is invaluable in forming healthful habits. There are certain stipulated hours for eating, for rest, for sleep, for treatment, and for recreation.

Diet.—Regularity in the matter of diet alone is of the utmost importance in most diseases, especially in gastric affections, and a careful, systematic regimen can unquestionably be governed most successfully in a sanatorium which devotes especial attention to this matter. Here the diet suitable for each individual case can be furnished, and the physician may feel assured that only such dietary as he may prescribe is given to the patient, of which fact he could not feel confident while treating the case at home. Sympathizing relatives or injudicious attendants might yield to the caprices and importunities of the invalid. Moreover, the facilities for furnishing a particular diet for one member of the family are not so convenient and complete in a home as in an institution having a special diet kitchen in charge of a competent cook.

Sanitary Living-rooms.—Of less importance, but still worthy of careful consideration is the sanitary and hygienic condition of the living-rooms in a good sanatorium. The structure itself is, or should be, constructed so as to furnish the best possible conditions for ventilation, light, heat, etc., and should be regulated by the attendants according to the individual interest and needs of the patient. This seemingly small matter is of sufficient moment to demand our attention, since it is at times woefully neglected in homes, not only in the sick room, but throughout the house, as nearly every physician in private practice can readily testify.

For cases that are not confined to their rooms or beds, there are in institutions of high character usually sufficient amusements and recreations to please and divert the mind. These of course, vary with the location and with the ingenuity and resources of the administration of the sanatorium. There are, however, usually pleasant out-of-door sports and recreations for those to whose condition they are adapted, and lighter in-door amusements for those deprived of open-air diversion.

Social Advantages of Sanatorium Life.—While a sanatorium is not particularly favorable for the establishment of social functions yet among a large number of the refined and intelligent classes of people who resort to such institutions one may be fairly sure of finding congenial associates with whom to pass the time pleasantly, and thus be relieved of a certain sense of loneliness which might otherwise supervene among strange, in a sense, alien surroundings.

Climatic Environment.—Finally in noting the advantages of sanatorium treatment there is to be considered the pleasing advantages of environment: climatic, geographical, and topographical location, and with these the natural resources peculiar to the institution, such as mineral waters, springs, etc.

Regarding the methods of sanatorium treatment, they should be pursued according to the manner suggested by a consideration of the above-named benefits.

Each patient should receive a thorough physical examination, with careful laboratory tests; and a correct diagnosis having been made, the treatment should be instituted in a thoroughly scientific and systematic manner. Especial attention should be paid to the selection of a proper diet, according to the indications presented in each case. Too much thought cannot be given to this matter. The majority of patients who frequent sanatoriums suffer from a digestion more or less impaired, and it is a flagrant neglect in many of these institutions that so little attention is given to the matter of diet.

But above all, and through all, a veritably broad, scientific spirit should pervade the entire management of an institution for the treatment of sick people. Though there be peculiarly potent natural or acquired advantages to be found in a sanatorium, these separate factors should not be the dominating influence in the management. Such things as "fads" may be successful in some cases; but any single method of treatment cannot scientifically be applied to all cases, any more than one single drug can cure all manner of diseases.

A sanatorium, therefore, to deserve the respect and confidence of the medical profession, and the laity as well, must have in the medical department physicians of recognized character and ability who will conduct the institution on a liberal and strictly scientific basis.

THE THERAPEUTIC APPLICATION OF PAPAVERIN.

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Opium is a mixture of two groups of alkaloids; the phenanthren group, morphin, codein, thebain, and the isochinolin group, papaverin, narcotin and narcein. Hitherto the former group only has been considered active. The papaverin group was regarded as inactive or of but feeble effect, yet it has long been known that although opium consists largely of morphin, the opium effect differs considerably from that of morphin alone. My investigations and those of my coworkers established the remarkable fact that the papaverin action is neither narcotic nor directly constipating, and that its effect and that of the other substances of the papaverin group have therapeutic applications.

Based on the results obtained I used papaverin on human beings and obtained new therapeutic effects which are particularly interesting because papaverin is almost non-poisonous.

In the following the results are discussed together with the most important statements by other investigators with regard to the use of papaverin in indications not yet reported upon.

In my investigations the intestinal effect was first studied. Observations on animals and human beings enabled me to state, in 1900[1], in opposition to the theory prevailing at that time of the purely paralyzing effect of opium and morphin upon the intestine, that opium and morphin do not paralyze the intestine, but excite the tonus of the intestine and peristalsis. Investigations regarding the participation of the various muscles in these symptoms showed the effect upon the flexor to be constant, that upon the extensor to be subject to variations, which I did not then explain. In 1902[2] I established that the tonus exciting effect is characteristic only of morphin and the morphin group, but not of the papaverin group. In 1908 R. Magnus[3], in experiments on the surviving intestine, confirmed my statement of the morphin effect. When opium in the purified, soluble form of pantopon became available I again took up investigations with regard to the nature of the opium effect. Erwin Popper,[4] in my laboratory, carried out tests on the surviving intestine and it was shown that morphin possesses a stimulating effect upon both muscle forms in the intestine; opium, in the form of pantopon, on the other hand, stimulates the flexor and paralyzes the extensor muscles. A new direction was thus given to research. The experiments carried out by Popper and C. Frankl[5] with the various alkaloids of opium fully cleared the situation. They taught that the paralyzing effect upon the extensor muscles is caused by the alkaloids of the papaverin group and that when used upon the flexor alone relaxation is produced.

My experiments[6] on the living animal have shown that the alkaloids of papaverin reduce the tonus of the intestinal wall without suspending peristalsis and that during this effect of papaverin the influence of the nerves is reduced to a minimum, and thus also the influence of the reflexions upon the intestine is reduced or eliminated. At the same time it was shown that papaverin exerts a reducing effect upon blood-pressure,[7] which is of little importance in normal animals when small doses are used, while that of the same doses is very marked under increased blood-pressure, as for example the increased blood-pressure produced by adrenalin or hypophysin.

Guided by these experimental results the extremely remarkable facts have resulted from observations carried out on intestines as well as on the vessels. *that papaverin exerts a direct tonus-reducing effect upon smooth muscular fibre* and that the effect sometimes passes away quickly, and sometimes is more persistent. Similar results were obtained in experiments on the bronchial muscles after an experimental broncho-spasm had been induced; likewise on the digestive tract, on the gall bladder, urethra and bladder, on the uterus and on the arteries. A tonus-reducing effect on the different species of animals was established without exception on all these organs. This was especially marked when prior to the use of papaverin the tonus of the respective smooth muscles has been increased by the administration of poison or by stimulating the nerves. All these experiences have been made not only with papaverin, but also with narcotin, and, moreover, as far as possible, with narcein; the latter, however, is but little soluble. Their effect is equivalent qualitatively, but not quantitatively.

The results of the experimental investigations upon which I do not here enter into details, led to the use of papaverin on human beings. It had long been known that the action of papaverin is non-toxic and Bouchet did not observe an effect of any kind when using 1 gramme per os. For use on human beings all those groups of diseases were included in which experience has proved spasms of the smooth muscular fibre. Accordingly, papaverin was employed on the digestive tract, in cardiospasms, in gastrospasms, in pylorospasm, in intestinal colics and in the so-called spastic ostipation. In all these groups the results were positive. The suitability of papaverin as a valuable medium in the differential diagnosis between pylorospasm and pylorostenosis was thus established and corroborated by the *x*-ray investigations by Holzknecht and Saglitzer[8] and by Szerb and Revesz[9]. The effect upon spasms of the stomach is clearly illustrated by the effect of papaverin in all cases of vomiting, especially so in hyperemesis gravidarium, in vomiting after chloroform narcosis, and after other intoxications, as for example after morphin, theophyllin, and also especially by successful administration in gastrospasm in sea-sickness. In all these cases papaverin must be administered so that the effect sets in at the proper moment, and an effect should be expected to occur within 20-30 minutes whether employed per os or subcutaneously. Therefore, in hyperemesis, for example, it must be given before the intake of food in corresponding intervals, equally so in sea-sickness. As is the case in spasms of the stomach, the effect of papaverin in intestinal spasms and in the genuine spastic ostipations is strikingly prompt. In this direction it possesses a certain resemblance to the action of atropin, it, however, differs from the latter in that papaverin has no effect upon the nerves, but only upon the muscles, and that the toxic by-effects of atropin, and particularly on secretion, are eliminated in papaverin. It therefore has an effect also in pylorospasms which are accompanied by hyperacidity, and upon the latter only when it is the result of the spasm. Observations by Zweig[10] have shown that the spasmodic closing of the newly opened passage which occasionally occurs after gastroentero-anastenosis is easily removed by papaverin.

It possesses a similar anti-spasmodic effect in spasms of the gall-bladder, as for example in renal colic; by the nature of its effect it removes pains and thus renders superfluous the administration of morphin. Reach[11] has proved experimentally that papaverin enlarges the duodenal sphincter of the gall passage. In cases of cholelithiasis with stagnation of the gall flux, I have myself repeatedly succeeded by the aid of papaverin in restoring the flux.

Very remarkable also are its effects upon the female genital apparatus because in suitable doses it is capable of removing spasmodic conditions of the uterus in menstrual colic.

The experiences on human beings confirmed what had already been proved experimentally, namely, that papaverin removes the bronchospasm in bronchitic asthma. In bronchitic asthma intravenous administration was tried on several occasions and in most instances an effect set in during the first minute. The reaction is not equally reliable in every case, however. This is probably due to the dosage and to the fact that the relief of the bronchospasms when intense swelling of the mucous membrane is also present is insufficient to completely relieve the obstructed respiration. Based on these observations E. Popper[12] used papaverin in whooping-cough with favorable results.

The effects of papaverin upon the blood-pressure are of no little interest when exhibited especially in acute vascular tension in the conditions which I include under vascular crisis,[13] particularly angina pectoris and abdominis, cardiac asthma, the vascular crisis in tabes and arteriosclerosis, in acute uremia[14] and eclampsia[15]. In these conditions papaverin has a relaxing action upon the vascular spasm and thus inhibits the seizure, especially when administered intravenously, and also when used subcutaneously. I have repeatedly observed similar results. Papaverin has little or no effect upon the chronic high pressure, as for example in the permanent hypertonia which accompanies chronic nephritis. My observations gave me the impression that papaverin in suitable doses removes the superfluous pressure leaving the physiological pressure intact. It was shown that the slight reductions in pressure obtained in chronic hypertonia induced a favorable influence upon the subjective condition of the patient. Very good results were also obtained in acute congestive conditions frequently exhibited in arteriosclerosis, in certain psychic alterations and especially in women during the climacteric period.

The compensating dilating effect of papaverin on the blood vessels induced me to try papaverin in hemoptysis, with excellent results. It is evident, however, that no essential gain can be obtained from the use of papaverin in profuse hemorrhages. Here I would like to say that in cases of angina pectoris, cardiac asthma and acute uraemia, etc., complicated with edema of the lungs, the use of papaverin is not very promising. The wide field for the use of papaverin is explained by its special action upon unstriped muscles.

A further property of papaverin is its local anaesthetic effect when used subcutaneously upon mucous membranes (conjunctiva, bladder, nose, etc.). Finsterer,[16] upon my instigation, carried out operations with papaverin local anesthesia at the Clinic Hochenegg, which proved successful. Here the dilating effect of papaverin upon the blood vessels proved embarrassing, but it can be easily removed. I took advantage of this paralyzing effect to apply in a painless manner painful injections, as for example those of certain mercurial preparations, nucleinate, tuberculin, etc. In these cases I proceeded as follows: I at first made a 4% injection of papaverin, and 3 minutes later, through the same needle and at the same place, I injected the respective substance. In nucleinate injections, often used in paralysis and multiplied sclerosis and other diseases, it was shown that not only were the injections well borne, but also the painful infiltrations which usually followed were as a rule eliminated.

Papaverin proved serviceable as an anesthetic for the mucous membrane of the nose in rhino-asthma, and I repeatedly succeeded in checking seizures of asthma by applying papaverin to the nasal mucous membrane. It may be administered per os, or per rectum, also subcutaneously or intravenously. For the latter method it is important to know the solubility of the preparation. Papaverin in its salts in concentrated solution is not very stable. The constitution of the glass containing it is important because the solution can only be kept in glasses free from alkali. Among the salts papaverin sulphate, "Roche," is the most easily soluble, and a 10% solution in glass vials free from alkali keeps well. Otherwise papaverin hydrochloride "Roche" is the salt most frequently used.

The internal dose per os and also for subcutaneous administration for adults is ½ to 1¾ grains. The daily dose may exceed 7½ grains. For intravenous administration I have employed from 1-12 tc ½ grain without any unpleasant by-effect.

With increased experience it will probably become possible to employ larger doses in individual cases as the subcutaneous injection of 15 grains (for anesthetic purposes) has been found not to show any by-effects.

The first administration of a dose of 1-6 to 1-3 grain in pylorospasm in infants, and the daily dose of 2¼ to 4½ grains in whooping-cough in children, is well borne.

[1] *Wiener med. Presse.*
[2] *Zentralblatt f. Physiologie.*
[3] *Pfluegers Archiv.*
[4] *Deutsche med. Woch.*
[5] *Deutsche med. Wochenschr.* 1912.
[6] *Deutsche med. Wochenschr.* 1913.
[7] *Wiener med. Ws.* 1913, *Med. Klinik* 1913, *Dtsch. med. Ws.* 1914.
[8] *Münch. med. Ws.* 1913.
[9] *Klin.-ther. Ws.* 1914.
[10] *Archiv. f. Verdauungskrankh.* 1913.
[11] *Wiener klin. Wochenschr.* 1914.
[12] *Wiener klin. Wochenschr.* 1914.
[13] *Pal: Gefässkrisen,* Leipzig. 1905.
[14] *Wiener med. Ws.* 1913.
[15] *Wiener klin. Ws.* 1914.
[16] *Pal: Dtsch. med. Ws.* 1914.

MENTAL METABOLISM.

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New York.

How often does it recur to the medical mind that there is a mental as well as a physical metabolism.

If we take food into our mouths it is that it may enter our systems, be metabolized and become part and portion of the organism; so, by numerous inlets do we receive from outside sources and metabolize mental material.

Paralleling that which we call material food, taken by the mouth, skin and lungs, is what may be called mental food, received through the senses, appropriated by the nerve matter, and metabolized in the same mysterious manner, to become part and parcel of the nervous system.

If the metabolic process in our physical system is so exceedingly complex as to be incomprehensible, it cannot compare with the mysteries of the process and properties of the nervous system; they are so occult that in order to conceal our ignorance and at the same time flatter our conceit we term it physical. thus credit to an extraneous and superior course, the cause for the mysterious work. Let us be still more honest with ourselves and state what we do know, and acknowledge wherein we are ignorant.

A belief may or may not be true, it cannot be proven; while what we know can be, for the same causes put in action, always produce the same results. As an illustration, there resides in humanity a jury, waiting to pass judgment upon every affair of life in its environment, which is brought to its cognizance; it receives the evidences brought by the senses, reviews it, with itself, also with all past evidences laid up in its storehouse of experience, and then passes judgment accordingly. If the senses are defective, either from construction or lack of attention, the judgment will accord truthfully with the evidence; hence in mortals, the imperfections of sense, carelessness in attention and the bias of desire will present to the jury false testimony, and the resultant is a belief and not a knowledge.

How many patients visit their physicians that they may receive a prescription for some fancied ill that is the result of some imperfect and hasty testimony? It is then that the physician becomes an advisor and an instructor pointing out the defects in observation.

To all of us has it at some time been told of the wondrous sight witnessed by the patient, and thoroughly believed as a declaration that they knew a surgeon who took out a patient's eye, scraped it and replaced it, after which it resumed its duties as fully as ever. One even asked an opinion concerning the virtues of an advertised nostrum, who, when told of its uselessness in the case, was severely shocked, saying: "It must be true, because I saw it in print."

Mrs. B——, about 35 years old, with a child of 3 years, was of a different belief from her husband and his relatives. Her beliefs, as theirs, were equally strong and positive—and each thought they knew that they were correct in their knowledge. The contentions were very unpleasant and continuous. When the lady was taken ill with a mild intermittent fever she lost what self-control she possessed, melancholy seized her, the child was overlooked, and life became burdensome. In this plight she applied to her physician for help. The malarial disease readily yielded to treatment; her self-control returned and she was strengthened when she was shown that the differences between herself and family were beliefs only. Each side may be right or wrong. These beliefs, not being certainties, were not provable, but the enjoyments of life and happiness were certainties and provable and she thereupon accepted the situation, attending to her daily duties with cheerfulness, thus insuring a rapid convalescence.

Brachial Neuritis.

The following is especially good in cases associated with rheumatism or gout:

℞ Phenazoni ..... gr. v-x
Sod. Salicylati ..... gr. x
Caffein. Citrat. ..... gr. v
Sp. Ammon. Aromat. ..... ʒss
Aq. Chloroform. ..... ad ʒss

—(*The Practitioner.*)

PERSONAL TRAITS OF DARWIN.

Percy Vessie, M. D.
Assistant Physician, Gowanda State Hospital,
Gowanda, N. Y.

An inquiry into the personal traits of Darwin reveals the fact that he made the most of every opportunity in life, gathered a vast fund of observations, and applied them with wonderful ingenuity to his scientific work. In his studies he employed a systematic way of reasoning, and thereby arrived at impregnable conclusions. The facility with which his flexible mind fathomed the depths of things was marvelous.

His mode of mental application was very original; he was not held back by warped views, nor impelled to over-enthusiasm, and his brilliant qualities were amplified by great independence of thought. He never hesitated or lacked courage to make public the results of his researches. Although his brain was the ruling factor, he was not an extremist. But little scope was given to mere fancy and, on the other hand, realism was never carried too far. He was the exponent of a matter-of-fact philosophy, and actual and practical matters meant everything to him.

Darwin's quickness of perception was strongly augmented by will-power, determination and energy, but a review of facts in his personal history shows that his activity was greatly impeded by a physical ailment of a chronic nature. From boyhood he had a refractive error of vision, which, in the course of time, resulted in many secondary symptoms, as, palpitation of the heart, distressing headaches, stomach disorder, fatigue and nervousness. It is quite apparent, according to the history of the case, that the prime cause of his condition was never detected by his attending physicians, who, at that time, did not recognize the above enumerated symptoms as consequences of a disturbed visual apparatus.

In the face of this discouragement, Darwin's intellectual powers remained unimpaired and he reached the height of ambition by intense eagerness and fixedness of purpose. In spite of his advanced age his mind remained perfectly normal, and at no time was there any indication of emotional deterioration marked by absurd religious ideas as demonstrated in Newton, Boccaccio, Tolstoy and others, all of whom shows signs of senile dementia.

Darwin possessed tact and perseverance in a high degree, and as a man of the world, he made the most of things and adapted himself readily to his surroundings. In all his dealings he was sincere and upright, and he despised untruth and hypocrisy. He was reserved in manner and well able to repel intrusion or familiarity, when necessary. In controversy matters were not minced; his remarks were to the point, and his confidence, quickness of thought, and powers of criticism and raillery were formidable weapons. He had a kind heart, but never wasted either sympathy or charity, for his character was guided by his brain alone.

His presence was commanding and those about him were inspired by his wonderful enthusiasm. He was fully aware of his capabilities, but was not engrossed with schemes for aggrandizement. He was never found lagging in the rear, and his tremendous energy and ability made him the most invincible intellectual giant of the nineteenth century.

Very early arteriosclerosis makes its impression on the heart, causing functional disturbance.

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Reorganization of Long Island College Hospital.

At the annual meeting of the Association of Alumni of Long Island College Hospital, Brooklyn, June 9th, a very striking announcement was made concerning the reorganization of the institution. A fifth year medical course has been adopted and the curriculum has been entirely changed to meet modern demands. Students will be accepted from the high school upon possession of a full medical student's certificate, and they will enter the preliminary year for instruction in chemistry, physics, biology, French or German, physiology and embryology. The freshmen and sophomore years will be devoted exclusively to the laboratory branches, and the various laboratories have been equipped with the latest and best apparatus. The junior year will include clinical work in medicine and surgery and daily dispensary work, while the fifth year will be devoted entirely to bedside work. Every clinical branch will have a full quota of resident full-time instructors.

Long Island College Hospital has at this time 300 beds and there is in course of construction a large wing which will give the institution 450 beds; making it one of the largest hospitals in New York.

The clinical material in the hospital will be available for the students of the medical school, and the very close connection between the hospital and the college gives the students unsurpassed opportunities for bedside instruction.

There has also been a considerable change in the faculty, and this reorganization, together with the addition of several full-time instructors, will give the institution a teaching staff of decided strength. The change in the faculty will be: Archibald Murray, M. D., Professor of Pathology; William Lintz, M. D., Professor of Bacteriology; John C. Cardwell, M. D., Professor of Physiology and Pharmacology; Matthew Steele, B. S., M. S., Ph. D., Professor of Chemistry; William Francis Campbell, A. B., M. D., Professor of Surgery; William B. Brinsmade, A. B., M. D., Professor of Clinical Surgery; Joshua M. Van Cott, M. D., Professor of Clinical Medicine; E. H. Bartley, M. D., Professor of Pediatrics.

The Chair of Anatomy, Histology and Embryology has not yet been filled. Thomas H. Evans, M. D., will be the full-time assistant professor in this department.

The Hospital Orderly.

The hospital orderly continues to be a problem. He can't be "uplifted." Theoretically, he ought to be raised to a point midway between where he now stands and the plane occupied by the male nurse, with a corresponding increase of wages and dignity. The salaries paid these attendants, and the menial character of the service required of them, make the occupation anything but alluring. Consequently many of these workers are drawn from a more or less dissolute class. Upon receiving their wages they are apt to disappear for some time, coming back like bedraggled cats after their money is gone. Recently a man was held up and relieved of his cash near a great hospital in the suburbs of one of the metropolitan boroughs. The bandits were rounded up and turned out to be orderlies connected with the hospital. Yet some of these hospital men serve their purpose very well.

Some observers are cynical when it is proposed to raise the status of the orderly in the direction of that of the male nurse—and they say lurid things about that anomalous character.

The solution probably lies in the elimination of the orderly as we know him, and of the male nurse as well. There is no reason why the female nurse should not displace both of these hospital attachés. The orderly lingers because of a traditional superstition regarding the care of one sex in sickness by the other. He is bound to go because his status cannot be improved, and as he is he is nearly useless and a great nuisance.

In a recent report to the Board of Estimate a committee of investigation says that this class of workers is made up of periodic and semi-responsible drunks who drift in and out of the city's hospitals, staying an average of from 77 to 134 days at a time at salaries ranging from $120 to $480 a year, with maintenance. This remarkable statement then follows: "The city has assumed the support of the indigent, and in the absence of other institutions wherein the periodic and semi-responsible drunks can live and work they can, to the best advantage both to themselves and to the city, be supported as workers in the city's hospitals. This class renders good service when sober and is content to serve for a small wage."

In contrast to the foregoing statement former Charities Commissioner Hebberd had this to say at the 1912 meeting of the Medical Society of the State of New York: "No matter how perfect and adequate the plant, the best results are impossible if the hospital employees are not of good character and ability, or have reason to be dissatisfied with their compensation and maintenance. Aside from the regular nurses, as a rule, the lower grades of help coming into contact with the patients at the public hospitals are not sufficiently paid

to enable the institutions to secure suitable employees. A notable example of this evil is to be found in the hospital helper class of the Department of Public Charities in New York City, where between seven thousand and eight thousand changes have to be made annually, to keep a little over a thousand places filled."

How Long, O Lord?

How much charity is dispensed by so-called private hospitals? Their foundations represent, in themselves, specific gifts on the part of individual philanthropists, acting with distinctly charitable motives (aside from vanity, remorse, etc.). But they take care mainly of people who pay for themselves or are paid for by municipalities in one way or another. It is pretty hard to get a patient into one of these institutions who is either unable to pay or who cannot be made a city charge. The hard spirit of some of the managers of these places is shown by the pressure which the State Board of Charities sometimes has to bring to bear upon them to effect adequate fire protection for the inmates. How can such institutions be depended upon to lessen charity abuse? The service rendered them by medical men is itself a charity abuse. The hospital gets something for nothing through its employment of free medical service. That this particular evil should flourish so greatly is one of the standing wonders of the modern world, a spectacle for the gods.

The Laborer Is Worthy of His Hire.

At the Peter Bent Brigham Hospital, in Boston, the staff is paid. The chiefs of staff have no outside practice. At certain of our municipal hospitals payment at the rate of five thousand dollars per annum for four hours daily service is contemplated. All the signs point to an extension of this economic principle. The day will come when good service will be properly paid for, which is as it should be. The sick poor in particular, in our public hospitals, should have the best of care insured them, which means the employment of first-class men at high salaries. You cannot get something for nothing. There are many instances of good service on the part of unpaid men, of course, but the principle is vicious and in its general application a failure in so far as the best interests of the sick poor are concerned.

The Promise of the Future.

Statistics of the Metropolitan Life Insurance Company show that morbidity is increasing, although the death rate is declining. At first thought this seems odd, since there is so much talk about preventive medicine, but it must be remembered that until we have complete reports we cannot do much, for application of sanitary science must be based on such reports. Accurate knowledge must precede campaigns. Registration comes before control. Then we must remember that much of our knowledge cannot be applied as yet, because of the unprepared state of public opinion. Thus there is still blind dependence upon certain forms of disinfection which are notoriously ineffective, to the practical exclusion of rational methods of simpler but less impressive character. Medicine still staggers under traditions and superstititions, and they cannot be wiped out in a day. The old medical rituals die hard.

The physical sign of greatest diagnostic importance in suspected tuberculosis, is the persistent presence of crepitations at the apices of the upper lobes.

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

The phonograph is now being employed in the operating room "as a means of calming and distracting patients from the horror of the situation when going under the anesthetic and during operations performed partially or entirely with local anesthesia." For some of us canned music would only add another horror to the situation.

Many acute observers agree that it is those who watch the new dances and do not dance themselves who are erotically affected, rather than the dancers. We have long suspected the peculiar vehemence with which the dances and dancers are denounced by certain righteous folk to be invested with much significance. The language employed by these outraged gentlemen in characterizing modern dancing has a rich suggestiveness, from the Freudian standpoint. Repressed erotic ideas surge and strain plainly in these verbal outbursts. What devils our religious leaders would be were they to break out and lead the dance! We very much fear that if they threw their repressions to the winds that what now appalls them so greatly would pale into insignificance in comparison with their performances.

One of the greatest factors making for the popularity of the movies is deafness. Only the sense of vision is called into requisition. It is a grateful form of entertainment even for those whose deafness is very relative, and there are an enormous number of people who suffer from slight degrees of deafness. An ordinary theatrical performance entails considerable strain and there is corresponding fatigue. If the acoustic properties of our halls and theatres were perfect, and if there were no such thing as deafness, the movies would not have attained to their present supremacy, despite cheap prices. Movies with mechanical talking devices are bound to fail; the deaf public do not wish to strain their ears to hear voices, from which strain they have been forever liberated. Why try to make them listen to a mechanical substitute for the human voice which is less audible than that voice itself?

What effect are our group methods having on our individual relationships? Theoretically, we are not supposed to lose sight of the individual, but we fancy that our personal relationships are not quite what they once were. The group methods are modern and essential, and must be still more highly developed. But we have not the same feeling for the individual. We wonder whether this situation has not something to do with the pique shown toward the doctor by certain people. Enormously egotistic, they have found themselves slighted. Perhaps they are justified in feeling "sore." Our social consciousness may be carrying us too far afield, or rather, we have not yet learned how properly to "accommodate," that is, to shift rapidly from the group attitude to the individual attitude. When confronted by a concrete, pulsing, keen egotist, a selfish little cosmos in himself, we must pray over his boil as though it were a carbuncle on the neck of Zeus. Nix then on the aloofness, the abstracted air, the detached manner, the group stuff.

The circumstances in which the new intelligence tests are applied to children suspected of being defective

sometimes make one question the validity of the results —assuming that the tests themselves are well adapted to the particular subjects. When one sees a tired and disheartened boy grilled for two hours in an office with two typewriters going at full clip, one wonders.

We should like to make up some tests for the testers, by the way. Why not? The results would be interesting. It is perfectly possible for people to absorb much knowledge and to be of some economic and social importance and yet not be intelligent thinkers. We fancy that a code adapted to what ought to be their capabilities could be easily made up. Take, for example, the conventional stupidities of middle-class moralities, and think what an examination would reveal with respect to their concepts and applications. Other points of approach readily suggest themselves.

That time-honored institution, the family bathtub, has been formally excommunicated by the local health board of Harrison, N. J., and the shower bath recommended as the only sanitary substitute. The citizens of Harrison are in open revolt, and are determined to die hard in defence of their Saturday night rights. It is rumored that heavy shipments of arms have been received despite the vigilance of the authorities. Civil war is imminent, but it is still hoped that the militia will be able to cope with the situation. President Wilson is on record as saying that he will not hesitate to send Federal troops into the disaffected district in the event of failure of the State Executive to control the outbreak.

If salvarsanized serum, why not iodized and mercurialized serum? In the treatment of locomotor ataxia and other forms of nervous syphilis why should we not, in addition to using the salvarsanized serum of the patient, also inject him with mercury prior to drawing off the blood, and also iodize him thoroughly for several days or weeks through the internal administration of potassium iodide? The results that we have been getting with salvarsanized serum alone, excellent though they are, would probably be enhanced by the combination method herewith suggested.

It seems likely that the charity organization societies will, as time goes on, take more account of illness as a factor in the causation of poverty, which is to say that they will take a hint from medical social service. They will use physicians and nurses more, or at least will see that their employees are to some extent instructed in the medical phases of their work. Since about 80 per cent. of their cases are in some way complicated by or due to illness, the necessity of medical scrutiny and understanding becomes evident. Probably this has been long realized; perhaps only the lack of funds has prevented the carrying out of a rational program. On the other hand, those engaged in medical social service will require training in social diagnosis and family rehabilitation. As time goes on co-operation will be close, if indeed the two forces do not actually fuse.

The feminists say that as soon as women wake up to their real duty as mothers more of them than ever will remain unmarried. Then they go on to say that every woman has a right to maternity. Most men are to be rejected as damaged goods. Having determined upon maternity, the feminist will carefully choose the father of her prospective child. And since it is demoralizing for a woman to live indefinitely with the same man, why, domesticity will wane.

But who will decide which of the feminists are gloriously endowed and fit to engage in these curious biological adventures? How can it be guaranteed that no "frights" will affirm themselves to be of the select class? Suppose one is "chosen" and doesn't like the "fleshscape?" What will constitute rape under the new dispensation? And then how can it be guaranteed that a really glorious creature will never pass a fine chap up and select an undersized, blear-eyed fellow?

The feminist movement ought to make great headway, since there is a glut of conceited males convinced that they would have to divide the "field" with but few competitors.

"Charity means one of two things—pardoning unpardonable acts, or loving unlovable people."—G. K. CHESTERTON.

"Before me stretched an immense, soundless, bitter ocean. On its shore stood a string of benevolent children, equipped with sugar-basins. What were they doing? They were throwing lumps of sugar into the waves, to sweeten the sea. Here was this vast putrescence strangling the air at our very doors, and what scavengers of charity might endeavour its removal?" —FRANCIS THOMPSON.

It is no longer heretical to point out the abuses of charity and to subject so-called charity itself to severe criticism. The true spirit of charity, as exemplified by St. Francis, is a mighty rare quality, despite the existence of innumerable foundations for the dispensing of aid of one kind and another. What we know as charity can hardly be accounted for on the purest basis. The shrewd and, by nature, really uncharitable "philanthropists" who seem to abound in the world get value received for every penny they dispense. What is it that they "buy?" Answer: Social prestige. It is just as truly an investment as the purchase of steel bonds. It is balderdash to ascribe any higher motive to the men whose methods of acquisition stamp them as ruthless and utterly selfish. Merely another phase of selfishness is revealed in their methods of acquiring social prestige in a world of sordid standards. Not until an enlightened society sees sanely and whole the evil of palliation and puts a stop to this type of sale will fundamental reform be possible and social prestige worth having be taken out of the market. Here is your true eugenic proposition.

"Organized charity, scrimped and iced
In the name of a cautious, statistical Christ."

The *New York Medical Journal* recently printed an editorial in which the advent of a state medical police force was predicted, made up of the rank and file of the profession. The editorial writer seemed to regard the coming of such a socialized force as inevitable. We have been unable to make up our minds as to whether the author of that editorial is a pessimist or a humorist. The article could be taken as either an emanation of gloom or as a subtle and ironic piece of fun. Is it possible that solemn and ponderous conservatism is to give place to frivolity? Can it be possible that we are to witness a transmutation in the world of metropolitan medical journalism similar to the *Harper's Weekly* rebirth? At any rate this journal's columns are now open for the discussion of interesting topics.

Something is happening, and the spirit of progress is surely descending upon our contemporary, for on May 16 there was a forceful editorial indictment of free medical dispensary service on the part of physicians.

Better to lag than not to move at all.

We say these things in kindly and encouraged spirit; having ourselves gone through the mill, we are glad to see others emerge for whom the struggle must have been far keener.

It feels decidedly good to be out in the light, championing without fear or favor the harassed elements in the profession, and not forever representing merely a certain wing.

Through our journalistic spectrum shines the light of all the professional elements. This is becoming increasingly the case with all the leading independent journals. Various modern forces, without as well as within us, really compel us to adapt ourselves to the times. We consider our name, the MEDICAL TIMES, specially significant in this connection.

Now comes a pharmacal company in New York offering to furnish the offices of recent graduates, the consideration being that said graduates prescribe the company's products.

As Artemus Ward said, this is 2 mutch. Enterprise can no further go on the one side, nor exploitation on the other.

Medical Editorial Table

The Profession and the Public.

The MEDICAL TIMES has published in its editorial columns seven signed replies to the query, "What Should Constitute a Standard of Ethical Publicity?" It is curious how many of those who discuss the subject should have missed the significance of the question, and discuss it simply from the standpoint of the individual physician seeking "newspaper notoriety." Two replies stand out from the barrenness of the other five for the breadth of the view taken, and for the fact that they recognize that the medical man should be an altruistic citizen even before he is a physician. The first of these replies that merit commendation is from the veteran, John A. Wyeth, whose life of wide experience has given him the stereoscopic vision that penetrates to the depth of things. Dr. J. W. Pettit, the medical director of the Tuberculosis Colony, of Ottawa, Ill., voices what should be the true spirit of the profession, and amplifies and particularizes the principles laid down by Dr. Wyeth. The time is ripe for such action as these men point out and it is to be hoped that such principles as these will govern the profession in the future. One of the crying needs of the hour is a medical editor for each one of the metropolitan dailies of wide circulation.—(*The Lancet-Clinic*, May 9, 1914.)

Defects in Dispensary Administration.

At one dispensary in New York men who are giving every year thousands of dollars in services are charged tolls if they are detained by the business of the institution and desire to telephone to their offices. It is rare indeed that the laboratory facilities or use of the Röntgen apparatus of the hospital are extended to the dispensary staff. The dispensary physician is exposed to the risks of strike malpractice suits, which he must defend at his own cost. The hospital corporation is protected by its charter and has declined to assume the burden of defending its unpaid staff. The dispensary doctor is beginning to ask why he is unpaid, and why he should render arduous and valuable services with little recognition and no privileges or emoluments as the servant of a wealthy corporation which pays its lawyers, chaplains, and architects, its superintendents, nurses and clerks. "The laborer is worthy of his hire." —(*New York Medical Journal*, May 16, 1914.)

The Mexican Situation.

General Funston, in command at Vera Cruz, reported on May 22 a sick rate of 1.49 per cent. among the soldiers and 1.46 per cent. among the marines quartered there. Smallpox has already been almost wholly eradicated from the city. The United States has a total fleet of 34 warships lying off Vera Cruz and 17 off Tampico. At least one other hospital ship besides the *Solace* is much needed by the navy. Two vessels are necessary, one to remain in the neighborhood of Vera Crud while the other is transporting the sick and wounded away from the tropics. Unless this is done, it is apprehended that there will be disasters which will arouse public criticism of the Administration. It is to be hoped that neither motives of false economy nor an undue sense of security in the present situation may be allowed to prevent the obtainment by the navy of a proper ship for the purposes required.—(*Boston Med. and Surg. Jour.*, June 4, 1914.)

Albuminuria Following Ingestion of Phenolphthalein.

Statements implying the non-toxicity of phenolphthalein and the absence of deleterious action therefrom on the kidneys are current. A recent report from the laboratories of bacteriology and physiologic chemistry at the Jefferson Medical College in Philadelphia comes, therefore, as somewhat of a surprise. In twenty experiments, in each of which, before beginning the trials, the subject's urine showed no trace of albumin by delicate tests, a twenty-four-hour specimen, collected after the administration of phenolphthalein in a 1-grain to 2-grain dose, gave positive tests for the protein in every case. The amount of albumin varied from a trace up to 0.25 per cent. by Esbach's quantitative method. The precipitate in many of the cases was tested and found to be insoluble in alcohol. Traces of phenolphthalein were demonstrated in the urine. The albuminuria lasted from one to three days. In experiments on the lower animals—cats, in this instance—no demonstrable phenolphthalein or albumin appeared in the urine after the administration of large doses. The kidneys showed no pathologic changes on microscopic examination.—(*J. A. M. A.*, May 16, 1914.)

Laboratory Cameras.

L. B. Wilson, Rochester, Minn. (*J. A. M. A.*, April 4), describes four types of cameras for laboratory use which do away with some of the disadvantages encountered in laboratory photographic work. These include a camera for use with the proctoscope, a miniature camera for photomicrography and a medium-sized stand for the same, and also a large stand and camera for generl laboratory photography, etc. The instruments are illustrated.

The American Association of Clinical Research

JAMES KRAUSS, M. D., Permanent Secretary and Editor.

DISEASE CONDITIONS EXPRESSIVE OF CORRECT DIAGNOSIS.

JAMES KRAUSS, M. D.,
PERMANENT SECRETARY AMERICAN ASSOCIATION CLINICAL RESEARCH,
Boston, Mass.

Part II.

(Concluded from page 197, June, 1914.)

II. Disorders and Diseases of the Alimentary System.

(Ingestion. Digestion. Egestion. The Gastro-Intestinal Tract. The Abdominal Wall and Cavity.)

A. Disorders of Ingestion.

(Salivation, Mastication, Deglutition.)

Bulimia, Pica; Adipsia, Polydipsia; Dysphagia, Pneumophagia, etc.

B. Disorders of Digestion.

(Chymification, Chylification, Peristalsis.)

Anorexia, Dyspepsia (acid, alkaline, atonic, flatulent, etc.); Merycism; Pyrosis; Tympanitis; Icterus, etc.

C. Disorders of Egestion.

(Feculation, Defecation.)

Emesis; Constipation; Diarrhoea.

D. Disorders and Diseases of the Gastro-Intestinal Tract.

The Mouth—Lips; Superior and Inferior Maxillary and Palatal Bones, Alveoli, Teeth; Gums, Cheeks, Palate, Uvula, Tonsils; Parotid, Submaxillary Sublingual and Mucous Glands and Ducts. (The Tongue—already considered under Gustatory Apparatus.)

The Neck—Pharynx, Oesophagus, Cellular Tissue of the Neck, etc.

The Abdomen—The Abdominal Wall and its Apertures—Umbilical, Inguinal, Femoral; the Peritoneum and its Reflections—Abdominal and Visceral, Omental, Mesenteric, Diaphragmatic; the Stomach—Cardia, Pylorus, Greater and Smaller Curvatures; the Duodenum and Openings of Common Bile and Pancreatic Ducts; Jejunum and Ileum; Caecum and Appendix Vermiformis; Colon and Sigmoid; Rectum and Anus.

The Liver and the Pancreas will be considered under Glands.

1. *Developmental.* — Macrocheilia, Cheiloschisis (Harelip), Cheilognathopalatoschisis, Macrodontia, Macrostoma, Microstoma, Distoma, Atretostoma (Atresia Oris), Atretolema (Oesophageal and Pharyngeal Atresia), Thoracogastroschisis, Gastroschisis, Proctatresia (Atresia Ani), etc.

Gastroptosis, Gastroenteroptosis, Enteroptosis, Proctoptosis; Hernia (external, internal; direct, oblique; reducible, irreducible; incarcerated, strangulated; inguinal, femoral, unbilical, ventral, diaphragmatic, retrocecal, retroperitoneal, etc.; epiplocele, enterocele, rectocele, etc.).

Ectasia (Oesophageal, gastric, intestinal; trabecular, etc.); Stenosis (obstructive, non-obstructive; acute, chronic; oesophageal, gastric, intestinal; hour glass, intussusception, volvulus, strictures, etc.); Elongation (Uvula, etc.).

Xerostomia; Achylia, Hyperchylia; Achlorhydria, Hyperchlorhydria; Pruritus (ani, etc.).

Atrophy, Hypertrophy (Muscular, Glandular, etc.); Gastromalacia (with or without ulcer, etc.); Melaena Neonatorum; Hyperaemia, Oedema, Ascites; Thrombosis (Mesenteric Vein etc.), Embolism (Mesenteric Artery, etc.); Hemorrhoids (external, internal, etc.).

Concretions (salivary, tonsillar, intestinal, etc.); Cysts (Ranula, congenital hydrocele of the neck, chylous cysts of mesentery and enterocystomata, etc.), Homoeplasms (Polypi, etc.), Heteroplasms (Epulis, Carcinomata, Sarcomata, etc.).

Fistula (congenital of the neck, etc.), Leucoplakia (buccalis, etc.), Enteruria, etc.

2. *Traumatic*—Medicinal Ptyalism; Corrosions of Poisoning (acute, chronic; with or without perforation, haematemesis, enterorrhagia, etc.); Foreign Bodies; Contusions, etc.

Wounds, Burns, Rupture (perforating, non-perforating), Compression, Fracture (jaws, etc.), Dislocation (lower jaws, etc.), Torsion (intestinal, omental, etc.)

Occupational Emphysematous Tumor (salivary, etc.), Fissura (ani, etc.), Haematoma.

3. *Infections*—Labial Syphilis, Tuberculosis, Mycosis, etc.

Stomatitis (catarrhal, aphthous, ulcerative, suppurative, protozoic, mycotic, etc.); Stomatonecrosis (noma, cancrum oris); Gingivitis, Parulis, Pyorrhoea Alveolaris, Alveolar Abscess, Odontonecrosis; Parotitis (primary, metastatic), Salivary Glandulitis, Salivary Abscess, Salivary Fistula, etc.

Angina (palatal or faucial, tonsillar, pharyngeal; acute, chronic; simple or catarrhal, aphthous, diphtheritic or pseudodiphtheritic, phlegmonous, syphilitic, tuberculous, mycotic, follicular, granular, atrophic, hypertrophic, etc.); Tonsillar Abscess, Retropharyngeal Abscess, etc.

Oesophagitis (catarrhal, phlegmonous, syphilitic, tuberculous, etc.), Gastritis (acute, chronic; catarrhal, membranous, toxic; atrophic, hypertrophic; interstitial, sclerotic, etc.), Gastroduodenitis, Gastroenteritis, Enteritis, (primary, secondary; membranous, pseudomembranous, polypous, cystic; phlegmonous, mycotic, etc.), Paraenteritis, Perienteritis, Duodenitis, Jejunitis, Ileitis, Typhlitis, Peritlphlitis, Typhlodicliditis, Appendicitis (catarrhal, phlegmonous, gangrenous, etc.), Peritonitis (acute, chronic; local, general; primary, secondary; adhesive, proliferative; tuberculous, etc.), Colitis (catarrhal, membranous, mucous, ulcerative, etc.), Proctitis, etc.; Abscess (omental, rectal, prerectal, etc.); Fistula (intestinal, recto-vesical, etc.).

Typhoid, Typhus, Cholera (nostras, asiatica, etc.), Dysentery (amoebic; catarrhal, diphtheritic, gangrenous, etc.).

Helminthiasis (Taenia, Bothriocephalus, Ascaris, Trichina, Trichocephalus, Oxyuris, Anchylostoma, Anguillula, etc.), Myiasis, Amoebiasis, etc., Echinococcus Cyst, etc.

III. Disorders and Diseases of the Respiratory System.

(Respiration. Phonation. The Respiratory Tract. The Thorax and Diaphragm.)

A. Disorders of Respiration.

(Inhalation, Oxygenation, Exhalation.)

Cogwheel Breathing, Mouth Breathing, Puerile Breathing, Thoracic Breathing.

Respiratory Insufficiency (Tidal—less than 500 cc.; Complemental—less than 2000 cc.; Vital—less than

3500 cc.); Residual Excess (more than 1200 cc.); Reserve Excess (more than 1500 cc.).

Cough; Apnoea, Asphyxia; Dyspnoea, etc.

B. Disorders of Phonation.

(Whisper, Speech, Song.)

Aphonia, Dysphonia, Dysphasia, Dysphemia, Dysphrasia, etc.

C. Disorders and Diseases of the Respiratory Tract.

The Nose, The Mouth, The Pharynx—already considered.

The Larynx—Epiglottis; Thyroid, Cricoid, Arytenoid, Cornicular and Cuneiform Cartilages; True and False Vocal Cords; Recurrent Laryngeal of the Pneumogastic and other nerves, Muscles, Bloodvessels, etc.

The Trachea, Bronchi, Bronchioles; the Lungs, Air Cells, Pulmonary Capillaries and Radicles; the Pleurae—Costal, Pulmonary, Mediastinal, Diaphragmatic.

The Thorax—Sternum, Ribs, Dorsal Vertebrae, Intercostal Muscles, and the Diaphragm.

1. *Developmental*—Laryngotracheoschisis, Thoracoschisis, Thoracoceloschisis, Pleurosoma, Thoracocyrtosis, Thoracodidymus, Thoracogastrodidymus, Thoracopagus, Thoradelphus, etc.

Ossification (Laryngeal and Tracheal Cartilages), Ankylosis (arytenoids, etc.), Adhesion (epiglottic, etc.), Stenosis (oedema glottidis, spasmodic closure of glottis, etc.), Ectasia (Bronchiectasia, Bronchiolectasia, Pulmonary Emphysema, etc.), Atelectasis, etc.

Laryngoxerosis, Asthma (Bronchial, Reflex, etc.), Bronchorrhoea, Hyperaemia (Infarct, etc.), Embolism of Pulmonary Artery, Pulmonary Oedema, Pneumolith, Pleurolith, Broncholith, etc.

Laryngocele, Tracheocele, Tracheoaerocele, *True* Bronchocele, Pneumonocele, Pleurocele, Diaphragmatocele; Homoeoplasms and Heteroplasms (Bronchioadenoscirrhus, Encephaloid, Epithelioma, etc.).

2. *Traumatic*—Foreign Bodies (in Larynx, Trachea, Bronchus), Abrasion, Puncture, Wounds, Fractures; Burns, etc.

Occupational Koniosis (Anthracosis, Siderosis, Chalicosis, etc.).

Pneumothorax, etc.

Compression (chest wall, etc.), Haematoma, etc.

3. *Infections* — Epiglottiditis, Laryngitis (acute, chronic; catarrhal, suppurative, diphtheritic, tuberculous, syphilitic, etc.), Laryngeal Perichondritis, Laryngotracheitis, Tracheobronchitis, Bronchitis (acute, chronic; catarrhal, putrid, plastic, etc.), Bronchiolitis (capillary bronchitis), Bronchopneumonia (lobular pneumonia; catarrhal, tuberculous), Lobar Pneumonia (acute, chronic; vesicular, interstitial, hypostatic, etc.), Pleurisy (acute, chronic; serous, fibrinous, purulent, etc.), Pleuropneumonia, Pyopneumothorax, Mediastinitis (Lymphadenitis, Abscess, etc.).

Bronchomycosis, Pneumomycosis, Pulmonary Tuberculosis, etc., Echinococcus Cysts, etc.

IV. Disorders and Diseases of the Circulatory System.

(Lymph. Blood. Anabolism. Katabolism. Portal. Pulmonary and General Circulations of the Adult System. Secretions. Excretions. Omphalomesenteric and Fetal Circulations of the Unborn. Duct and Ductless Glands. The Lymphatic and Haematic Vascular Systems.)

A. Disorders of Circulation.

(Lymph, Blood, Secretions, Excretions.)

Hypersecretion, Hyposecretion, Absence of Secretion (hepatic, pancreatic, adrenal, thyroid and parathyroid, thymus, pituitary, pineal, splenic, etc.)

Vicarious Excretion, etc.

Autointoxication (enterogenous, histogenous, reabsorption, retention, etc.).

Bradycardia, Tachycardia, Palpitation, Heart Block.

Malnutrition, Obesity, Cretinism, Myxoedema, Accomegaly, etc.

B. Disorders and Diseases of the Duct and Ductless Glands.

The Liver and Gall Bladder—Cystic, Hepatic and Common Ducts.

The Pancreas—Islands of Langerhans and Wirsung's Duct.

The Spleen—Malpighian Corpuscles—Accessory Spleen.

The Thyroid—Lateral Lobes, Isthmus, Parathyroids.

The Thymus—Hassal Corpuscles, Lobules.

The Adrenals—Cortex, Medulla, etc.

The Pituitary—Oral and Cerebral Lobes, Infundibulum.

The Pineal Gland is considered with the Brain; the salivary, gastric, intestinal glands with the gastro-intestinal tract; the mucous glands with the mucous surfaces; the sebaceous glands with the skin; the ceruminous glands with the ear; the Meibomian and lachrymal with the eye; the lactic glands, the mamma, testes and ovaries will be considered under the sexual system; the kidneys and prostate under the urinary system. The membranous secretions have already been considered with the joints, ear, nervous system, peritoneal and pleural sacs.

1. *Developmental*—Hepatoptosis, Splenoptosis, Aberrant Adrenal Rests, etc.

Hepatauxe, Splenauxe (Banti's Disease, etc.), Goitre (Exophthalmic, Strumous, etc.), Thymus Persistency, etc.

Hepatatrophia (acute yellow atrophy, etc.), Atrophy of the Pancreas, Thyroid, etc.

Hepatocele, Splenocele, Homoeoplasms, Heteroplasms, Cysts.

Stenosis and Obstruction (acute or chronic; Portal Vein, Hepatic Ducts, Cystic Duct, Common Bile Duct, Pancreatic Duct, etc.), Cholelithiasis, Pancreolithiasis, etc.

Icterus Neonatorum, etc.

2. *Traumatic*—Rupture (Hepatorrhexis, Splenorrhexis, etc.), Wounds.

3. *Infectious*—Hepatitis (syphilitic, tuberculous, hypertrophic, cirrhotic, etc.), Perihepatitis, Pylephletitis, Hepatic Abscess (amoebic, etc.), Cholangitis (catarrhal, suppurative ulcerative, etc.), Pericholangitis (adhesive, non-adhesive, etc.), Cholecystitis (acute, chronic, etc.), Pancreatitis (syphilitic, tuberculous, etc.); Splenitis (syphilitic, tuberculous, protozoic, etc.), Perisplenitis; Thyroiditis, Thymitis, Adrenalitis (syphilitic, tuberculous, etc.; Melasma suprarenale, Addison's Disease); Hepatomycosis, Echinococcus Cysts, etc.

C. Disorders and Diseases of the Lymph and Blood Apparatus.

Lymph—Lacteals, Lymphatic Vessels and Glands, Receptaculum Chyli, Thoracic and Lymphatic Ducts.

Blood—Bloodvessels: Arteries, Veins, Capillaries; The Heart: Pericardium, Auricles and Ventricles, Tricuspid, Mitral and Pulmonary and Aortic Semilunar Valves, Endocardium.

1. *Developmental*—Bathycardia (Cardioptosis), Ec-

topia (cordis, phlebectopia, arteriectopia, etc.), Cor biloculare, Cor villosum, Cardiocele, etc.

Lymphangiectasis, Varix (aneurismal, arterial, venous, etc.), Cardiectasia (Dilatation of the heart), Arteriomalacia, Arteriosclerosis (local, general, central, peripheral, etc.).

Leukaemia, Pseudoleukaemia (Multiple Lymphadenoma, Hodgkin's Disease), Chlorosis, Polycythaemia, Purpura (hemorrhagica, non-hemorrhagica), Haemophylia, Hyperaemia (active, passive), Anaemia (simple, pernicious, etc.), Embolism, Thrombosis; Lithaemia, Uraemia, Cholaemia, etc.

Phlebolith, Cardiolith, Homoeoplasms (non-traumatic aneurism, etc.), Heteroplasms.

Hypertrophy (heart, lymphatic glands, etc.), Atrophy, Cardiethmoliposis, Cardiomyoliposis, etc.

2. *Traumatic*—Rupture (cardiorhexis, vascular, etc.), Wounds, Contusions.

Aneurism, Pneumopericardium, etc.

Foreign Body (heart, pericardium, etc.).

3. *Infectious* — Lymphangitis, Lymphadenitis, Lymphatic Abscess (tuberculous, gonococcic, chancroidal, etc.); Arteritis, Endarteritis (Arteritis deformans), Phlebitis (adhesive, suppurative, etc.), Endophlebitis, Pericarditis (serous, fibrinous, purulent, etc.), Myocarditis, Endocarditis (acute, chronic, ulcerative, etc.), Endomyopericarditis, etc.

Bacteraemia (Fevers), Toxaemia (bacterial, parasitic, eruptive, febrile, epidemic, endemic, tropical, etc.), Septico-Pyaemia, etc., Filariasis (Elephantiasis Arabum, etc.).

V. Disorders and Diseases of the Urinary System.
(Urine. Micturition. The Urinary Glands and Tract.)

A. Disorders of Urine and Micturition.
(Water, Excrementitious Substances, Ureteral Peristalsis, Vesical Contraction, Sphincteric Dilatation.)

Pollakiuria (nocturnal, diurnal, polyuric, oliguric, etc.), Dysuria (precipitant, painful, pollakiuric, etc.), Ischuria (obstructive, oliguric, polyuric, complete and incomplete, vesical or pelvic, etc.), Incontinentia (true, false, mixed), Anuria (true, reflex, initial, terminal), Oliguria, Polyuria, etc.

Pneumaturia (false, true), Albuminuria, Albumosuria, Chyluria, Haematuria, Hemoglobinuria, Glycosuria, Levulosuria, Ketonuria, Amyluria, Azoturia, Anazoturia, Chloruria, Lithuria, Phosphaturia, Oxaluria, Indicanuria, Choluria, Bacteriuria, etc.

B. Disorders and Diseases of the Urinary Glands and Tract.

The Kidneys—Fatty and Fibrous Capsules, Cortex, Medulla, Glomeruli, Uriniferous Tubules, Renal Arteries and Veins, Calices, Pelvis, Ureter.

The Bladder—Summit, Body, Base, Neck, Detrusor Muscles, Sphincter, etc.

The Urethra—Anterior, Posterior; Meatal, Penile, Bulbous, Membranous, Prostatic, etc.

The Prostate—Lateral Lobes, Middle Lobe, etc.

1. *Developmental*—Horseshoekidney; Double Pelvis and Ureter; Nephroptosis; Ureteral Atresia, etc.; Exstrophia Vesicae; Ectopia Vesicae; Epispadias, Hypospadias; Persistent Urachus; Vesica bipartita seu biloculari; Absence of Urethra; Urethral Atresia; Paraurethral Canals, Urethral Prolapse.

Hypoplasia (renalis, vesicae, etc.), Homoeoplasms (Papilloma, Caruncle, Polypi, etc.), Congenital Cysts, Heteroplasms (Hypernephroma, Carcinoma, Sarcoma, etc.).

Hypertrophy (Prostate, etc.), Trabecular Bladder, etc., Nephrolithiasis, Stone (Bladder, Ureter, Prostate, Urethra).

2. *Traumatic*—Rupture (Nephrorhexis, Cystorhexis, etc.), Wounds, etc., Contusions, Abrasions, Burns.

Foreign Bodies (Urethra, Bladder, etc.), etc.

Catheter Fever; Strictures.

3. *Infectious*—Nephritis (glomerular, parenchymatous, interstitial; acute, chronic, etc.); Perinephritis, Paranephritis, Pyonephrosis, Pyelonephritis, Pyelitis, Ureteritis, Cystitis (catarrhal, suppurative, tuberculous, etc.), Urethritis (gonococcic, postgonoccic, non-gonococcic, etc.), Prostatis (gonorrheal, tuberculous, etc.).

Abscess (renal, perirenal, pararenal, prostatic, periurethral, etc.), Fistula (vesical, ureteral, urethral, etc.), Strictures (postgonorrhoeic, tuberculous, syphilitic, etc.; urethral, ureteral, etc.)

VI. Disorders and Diseases of the Sexual System.
(Vita Sexualis: Male and Female. Reproductive Fluids: Seminal and Graafian. Male and Female Sexual Organs, including the Mammary Glands.)

A. Disorders of Sex and Reproduction.
(Coitus. Conception. Gestation. Parturition. Lactation.)

Impotence (impotentia coeundi, paradoxica; organic, symptomatic, psychic, irritable, paralytic, etc.); Frigiditas muliebris; Priapism, Clitorism, Dysaphrodisia, Sexual Hyperaesthesia, Sexual Paraesthesia, Sexual Anaesthesia, Hypaphrodisia, Anaphrodisia, Dyspareunia, Sterility (impotentia generandi; male, female; absolute, relative; sterilitas matrimonii, facultativa), Abortion (habitual, etc.), Galactoplania, Galactoschesis, etc.

Galactorrhoea; Urethrorrhoea, Vaginorrhoea, Metrorrhoea ex libidine; Leucorrhoea (vaginal, uterine, etc.); Spermatorrhoea (continuous, occasional; defecation, micturition, etc.), Prostatorrhoea (continuous, defecation, micturition, etc.), Amenorrhoea, Dysmenorrhoea, Menorrhagia, etc.

Masturbation (manual, sensory, psychic, etc.), Homosexuality, etc.

B. Disorders and Diseases of the Male Sexual Organs.

The Penis—Root, Body, Glans, Prepuce; Corpora Cavernosa, Corpus Spongiosum and Urethra; Muscles; Cowper's Glands, etc.

The Scrotum—Skin, Dartos, Spermatic Fascia, Cremaster Muscle, Infundibuliform Fascia, Tunica Vaginalis.

The Testes—Tunica vaginalis, albuginea, vasculosa, Lobuli Testis, Tubuli Seminiferi, Vasa Recta; Body of Epididymis, Globus Major and Minor; Vas Deferens; Spermatic Cord.

The Seminal Vesicles and Ejaculatory Ducts; Semen.

The Prostate—already considered.

The Pelvis—Ossa Irmominata, Sacrum, Coccyx—will be considered with the female sexual organs.

1. *Developmental*—Penischisis, Phimosis, Paraphimosis, Scrotal Hypospadias, Orchiocele, Orchiostosis, Varicocele, Spermatocele, Redundant Scrotum, etc.

Orchiatrophia, Orchidaute, Orchidemphraxis, Sclerosis (corpora cavernosa, etc.), Concretion (preputial, vesicular, etc.).

Homoeoplasms (cavernoma, etc.), Heteroplasms (carcinoma, sarcoma, etc.), Cysts.

2. *Traumatic*—Torsion (cord, etc.), Haematoma, Haematocele, etc.

Avulsion (Penis, etc.); Fracture (Penis, etc.), Frostbite (Penis, Scrotum); Strangulation (Penis, etc.); Dislocation (testes).

Burns, Abrasions, Contusions, Wounds, Foreign Bodies, etc.

3. *Infections*—Penitis .(Phallitis, Cavernitis; chancroidal, syphilitic, tuberculous, etc.), Posthitis, Balanitis, Balanoposthitis, Cowperitis, Scrotitis, Vaginalitis (acute, chronic; primary, secondary; testicular, funicular; closed, open, etc.), Orchitis (acute, chronic; metastitic, syphilitic; circumscribed, diffuse, etc.); Epididymitis (acute, chronic; gonorrhoeal, tuberculous, syphilitic, etc.), Orchiepididymitis, Deferentitis, Funiculitis, Seminal Vesiculitis, Pelvic Cellulitis, etc.

Orchiohydatidoma, Chylocele (scrotal, etc.).

C. Disorders and Diseases of the Female Sexual Organs.

The Vulva—Mons Veneris, Labia, Nymphae, Clitoris, Hymen, Glands of Bartholini.

The Vagina—Mucosa, Muscularis, Erectile Tissues.

The Uterus—Fundus, Body, Cervix, Os; Cavity; Ligaments (Broad; anterior, posterior, etc.), etc.

The Fallopian Tubes—Fimbriated Extremities, etc.

The Ovaries—Graafian Vesicles, Corpus Luteum, etc.

The Mamma—Glandular, Fibrous, Fatty Tissue; Nipple, Tubuli Lactiferi, etc.

The Pelvis—Ossa Innominata, Sacrum, Coceyx.

1. *Developmental*—Deformed Pelvis (Funnelshaped, Masculine, Triangular, Scoliotic, Lordotic, Fetal, etc.), Clitoridauxe, Metrauxe, Stenosis (Vagina, Uterine Cavity, Fallopian Tube, etc.), Atresia (vaginal, uterine, tubal, etc.), Adhesions, etc., Atrophy (labial, vaginal, uterine, etc.); Ectopia (Ovarian, Tubal, Uterine, Flexion, Version, Prolapse, etc.), Metrectasia (Pregnancy, Fibroid, etc.), Infantilism.

Cysts (Bartholini, Hydrocele of Canal of Nuck, Galactocele, etc.), Homoeoplasms, Heteroplasms.

Pregnancy (uterine, extrauterine, etc.), Placenta Praevia, Hydramnios (Pregnancy), Hydrorrhoea Gravidarum, Parturition (Position, Time; Mature, Premature; complete, retained secundines, etc.), Puerperium (Subinvolution, Involution, etc.).

2. *Traumatic*—Perineal Laceration, Cystocele, Rectocele, Lacerated Cervix, Ruptured Uterus, Haematoma, Carunculae Myrtiformes, Fissura (mammillaris, etc.), Haemorrhage (pregnancy, parturient, puerperal, etc.), etc.

Foreign Body, Wounds, Contusions, Abrasions, Burns, etc.

3. *Infectious*—Vulvitis (follicular, gonorrhoeal, diphtheritic, etc.), Bartholinitis, Nymphitis, Clitoritis, Vulvovaginitis, Hymenitis, Vaginitis (gonorrhoeal; granular, emphysematous, diphtheritic, senile, etc.), Endocervicitis, Endometritis (gonorrhoeal, decidual, etc.), Metritis, Perimetritis, Parametritis, Metrosalpingitis, Salpingitis, Pyosalpinx, Oöphoritis, Salpingoöphoritis, Mastitis, Mamillitis, Paramastitis, etc.

Abscess (Vulvovaginal, pelvic, mammary; puerperal, hydated, filarial, etc.), Fistulae (mammary, vaginal, uterine, etc.; puerperal, etc.).

Conclusion.

It may be possible to make further enumeration. Some disease conditions expressive of correct diagnosis may have been omitted. They may easily be added by those conversant with the anatomy, physiology and pathology of the sensory-motor, alimentary, respiratory, circulatory, urinary and sexual organs.

419 Boylston Street.

Exposure to cold is almost certain to produce profound shock in children.

Special Article

PHYSIOLOGY OF THE GASTRO-INTESTINAL TRACT IN THE INFANT.*

Oral Cavity.—The salivary secretion is present immediately after birth, but at that time consists almost altogether of mucous devoid of potassium sulphocyanid. The reaction is neutral or weakly alkaline, but soon after the ingestion of milk becomes acid, due to the splitting of the milk-clots by the bacteria.

Just after birth the sucking of the child is reflex, and is carried on principally by the pressure of the gums against the ampullae of the lactiferous ducts, the nipple being held in a trough formed by the tongue pressed against the hard palate. Later in the lactation period this primary sucking period is seconded by the voluntary inspiratory act.

In examining the composition of the fat in the cheeks Lehndorff[1] found that it was poor in fatty acids and hence not easily assimilable. This would account for the fact that in many emaciated children which have not reached the last stages of marasmus, but in which the other fat of the body is almost lacking, the fat in the cheeks still remains. This fat "polster" may show very distinctly in thin young infants as a small round pad in each cheek.

For many years past, in spite of the protests of enlightened members of the profession, the physiologic process of "cutting teeth" has served as the explanation for almost all of the disturbances of infancy, especially of summer diarrhea and convulsions. Though we must admit that a large part of the etiology of the two conditions named is as yet unknown to us, still one can hardly regard this as sufficient reason to blame their occurrence on a perfectly normal process through which every child must go. As has been previously shown, "teething" is almost a continuous process from the sixth month to the end of the second year. The mere fact that teething and diseases of early infancy, notably summer diarrhea and convulsions, occur contemporaneously should not lead us astray in our diagnosis.

There is nothing in the anatomic relations of the teeth which can, even in a remote way, lead to the suggestion of a connection betwen the teeth and the intestines. "Reflex action" has been advanced as a theory of the mode of action of this process, but for this no facts have been given in support.

On the other hand, it is not unreasonable to think that the cutting of teeth may be accompanied by pain, since it is known that in the adult the appearance of the third molar teeth sometimes brings with it a certain amount of ache in the alveolar processes. That pain is present in all cases is certainly not true, since some babies cut their teeth without any manifestations of discomfort. As to others, the most that can be said is that apparently just before the teeth pierce the gums they seem to be in much pain, which is sometimes relieved by pressure on the gums.

During the time when the teeth are about to pierce the mucous membrane there is often an increase in the amount of the salivary secretion, which is shown by the drooling of the child.

Stomach.—The motor activity of the stomach in the infant is of much importance because of its relation to vomiting and to the length of the interval between

*From "Infant Feeding," by C. G. Grulee, M.D., of Rush Medical College. (W. B. Saunders Co. 1914.)

feedings. The work of Cannon on animals can probably serve as a basis for our knowledge of the opening and closing of the pylorus, which the most essential factor in the motor activity of the organ. From Cannon's findings we may deduce that an acid reaction of the contents of the pyloric region of the stomach causes opening of the pylorus, while an acid reaction in the duodenum causes it to remain closed. After the coagulation of the milk in the stomach the contents consist of whey and curds. The former is readily acidified and, therefore, passes the pylorus first, together with any added carbohydrates which happen to be present. The protein requires a longer time, since the acid of the stomach is combined, and hence a certain time elapses before free acid is present. The fatty acids and neutral fats are the last to pass the pylorus, not because they do not easily acidify, but because it takes much longer for the fatty acids to be neutralized by the duodenal juices, and hence the pylorus remains closed because of duodenal acidity. We readily see, then, that a high fat-content of the food delays its passage through the pylorus. Extreme dilution acts in the same way, probably because of the slight stimulation of the gastric mucosa, resulting in reduced secretion and, hence, acidity. The stomach is emptied much more quickly in the breast-fed infant, the average being about two hours. The time varies with the amount taken. As to cow's milk, the same restrictions must be made, but in the majority of cases the food leaves the stomach only after three hours. These conclusions are not absolutely reliable because of our methods of estimation. Up to the present time two methods have been employed for determining the length of time the food remains in the infant's stomach. To the first of these, gastric lavage may be objected that all food cannot be removed in this way, and hence the length of time that the food remains in the stomach cannot be accurately determined. The second, by means of the bismuth meal and the *x*-ray, has recently been studied by Pisek and Lewald,[2] Ladd,[3] and Major.[4] The findings in general point to a distinct individual difference in the length of time that food remains in the stomach. To this method may be objected that the bismuth adds a substance which is not normally present. In general it may be said, however, that the statement that food is found in breast-fed infants, under ordinary conditions, usually at least two hours after feeding, and in artificially fed three hours, is correct. However, individual cases may vary greatly from this general rule.

In the stomach of a four months' fetus there is digestive activity; rennet is nearly always present, as is also pepsin, if there is any acidity. The acidity of the gastric juice is due to several substances; first, to HCl and HCl-albumen bodies, albumose and peptone; second, to lactic acid; third, to fatty acids; fourth, to phosphoric acid, acid phosphates, and the inorganic acid bodies formed by action of the HCl on the salts; and fifth, to other acid substances in human milk. According to Davidsohn,[5] hydrochloric acid in the infant's stomach shows no real difference from that of the adult, variations being due to difference in choice of test-meals. The free HCl increases as digestion advances; hence, the longer the interval between feedings the more free HCl is present, and the greater the bactericidal action of the gastric juice. As in the adult, the HCl acts as an aid to peptic digestion, splits the sugars, and, if in sufficient strength (.07 to .08 per cent.), inhibits the production of lactic acid, and acts as a disinfectant. The HCl posesses two other properties which are of much importance to the infant: it is a good detoxicant, being a great aid in the destruction of animal and vegetable toxins, and it also is a good denaturizing agent, which robs foreign albumin of the property of being able to produce antibodies. From the action of HCl and other digestive substances the casein of cows' milk is thus prevented from producing any specific poisons in the infant organism. Hess[6] has found free hydrochloric acid in the stomach immediately after birth in 54 out of 55 cases, in most of them in large amounts. This presents an interesting problem in that the stimulation of the gastric glands cannot be accounted for in the usual way. The action of rennet is the same as in the adult, but not so marked, because of the smaller quantity of the ferment. The casein is coagulated into paracasein, which contains much calcium phosphate. In reality, the clots of cows' milk are probably no larger than those of human milk (although test tube experiments would tend to show the opposite), since the motor activity of the stomach tends to keep the curd well broken up. Coagulated milk requires less HCl than does uncoagulated. The coagulation is naturally influenced by such factors as the constituents of the food, the dilution, previous heating and the presence of clots from previous feedings. As to the true function of rennet we know very little; it may be that its action only delays the absorption of the casein.

Pepsin is frequently present, and, according to most writers, splits the protein molecule as far as peptone, but Salge[7] thinks that the hydrogen in concentration in the stomach is so slight that pepsin digestion is not possible even in the normal infant. We are as yet uncertain as to how important for protein digestion the action of pepsin is, but that a certain amount of digestion is carried on by the pepsin is undoubtedly true. There is little difference in its digestive action on cows' and human milk. Like HCl, pepsin acts as a denaturizer.

Lipase, the fat-splitting ferment, is found in the stomach of the infant in small quantities. It is probably a definite product of the gastric mucosa.[8] As in the adult, the gastric mucosa of the stomach is stimulated directly (e. g., by contact with food) or physically (e. g., by sucking on the breast or bottle). The amount of the secretion is influenced very much by the character of the food ingested, a proportionately large quantity of fat distinctly inhibiting its formation. The maximum secretion is usually not reached for three hours. Absorption from the stomach is more rapid in the infant than in the adult.

Pancreas.—The pancreas of the newborn contains all the ferments found in the adult, but in much smaller quantity. This is proved by the findings of Lust and Hahn[9] in the stool, and by Hess[10] with the duodenal catheter. Lust and Hahn have found all of the pancreatic ferments in the infants' stools examined. The action of the trypsin is completed with the assistance of the erepsin of the succus entericus, and is greatly aided by a strong action of the gastric juice. As in the adult, the end-products of protein digestion are the amino-acids. The steapsin is much weaker in the adult, but here also its action is aided by the biliary salts. Amylopsin is always present in small quantities, but lactase and invertin are never found in the newborn.

Liver.—The liver possesses the ability to form glycogen and urea in the newborn. Of much importance for the infant is the protection against poisons, such as toxins of bacillus coli communis, toxic products

from the intestinal canal, as well as upon alcohol and alkaloids, such as morphin and strychnin. Bile is present in fetal life, and possesses the ability to dissolve fatty acids.

The *succus entericus* at birth contains enterokinase, erepsin, lactae, invertin and maltose.

The *permeability of the gastro-intestinal wall* is the same as in the adult for the end-products of digestion. It is undoubtedly true that in the vast majority of cases albumins cannot pass the gastro-intestinal wall of the infant unchanged, but in certain cases there are idiosyncrasies against cows' or human milk. Although no direct proof offers, there is reason to believe that small quantities of foreign albumin pass through the intestinal wall unchanged and give rise to symptoms of an anaphylactic nature. In nutritionally deranged infants, Lust[11] has recently shown that egg albumen is present in the urine in the severer cases. Hahn[12] has had much the same results with antitoxin. Lust's[13] results, however, with bovine albumen were not so conclusive. Antitoxic bodies (diphtheria anti-toxin) contained in the mother's milk are not absorbed unchanged. It is probable that some highly resistant bacteria, such as the tubercle bacillus (Uffenheimer), pass through the intestinal wall, perhaps enclosed in fat-globules.

General Conclusions.—In a general way, then, we see that the infant's gastro-intestinal tract is perfectly able to digest and absorb all food-stuffs, but in relatively less amount than in the adult. When we realize that we have to do with an alimentary system in the formative stage, and that this undeveloped group of organs is called upon not only, as in the adult, to make good the body waste, but also to supply tissue for the formation of the growing body, and that, too, at a time when the body growth is relatively much greater than at any subsequent period of life, we may readily account in large measure for the frequent gastro-intestinal disturbances in the first and second years. Another function not less important is the denaturizing and detoxicant action of the infant's gastro-intestinal tract.

In regard to the fat digestion and absorption, there has been in the past much controversy, caused, no doubt, in large part, by the difficulty in differentiating accurately in the stools the various forms of fat. An article of Usuki[14] is probably most reliable because of the perfection of his technic. He found that about 99 per cent. of the food fat was split by the intestinal juices, and that only 13 to 13.5 per cent. of this was found in the feces. The fat in the normal feces consisted of about 10 per cent. earthy soaps, and the rest fatty acids.

[1] *Jahrb. f. Kind.* 1907. lxv, 286.
[2] *Amer. Jour. Dis. of Child.* 1913. vi, 232.
[3] *Ibid.* v, 345.
[4] *Zeitschr. f. Kind.* 1913. viii, 340.
[5] *Zeitschr. f. Kind.* 1912. iv, 208.
[6] *Amer. Jour. Dis. of Child.* 1913. vi, 264.
[7] *Zeitschr. f. Kind.* 1912. iv, 171.
[8] Sedgwick and Schultz, *Amer. Jour. Dis. of Child.* 1911. ii, 243.
[9] *Monatsschr. f. Kind.* 1912. xi, 311.
[10] *Amer. Jour. Dis. of Child.* 1912. iv, 205.
[11] *Jahrb. f. Kind.* 1913. lxxvii, 243.
[12] *Ibid.*, 405.
[13] *Ibid.*, 383.
[14] *Jahrb. f. Kind.* 1910. lxxii, 18.

To make the symptoms of extreme cardiac exhaustion one's only justification for active therapy is both illogical and dangerous.

LOCAL ANESTHESIA.

Charles H. Frazier, of the University of Pennsylvania, reviews this subject in the current issue. He observes that as time goes on we find local anesthesia given a wider scope in the field of general surgery, and more recently its use has been extended to certain operations in the head and face. For the development of the latter, we owe much to the work of Braun, Offerhaus and Härtel, of Bier's Clinic. Typical methods have been devised and adapted to the various operations on the head and face, and are recommended by these authors in all such operations. Their experiences show that the anesthesia is sufficient from the point of view of intensity and extent, as well as duration.

In writing on this subject last year Frazier referred to Brauns' method of blocking the various branches of the trigeminus for operations for frontal sinus disease, for carcinoma of the nose and tongue, resection of the upper jaw, removal of the floor of the mouth and tonsils, and operations on the Gasserian ganglion itself, as well as for the extraction of the teeth. Härtel (*Arch. f. Klin. Clin.*, 1913, No. 1) reports 27 operations, including 13 resections of the upper jaw, 8 extirpations of the tongue, 3 resections of the lower jaw, 2 operations for tumors of the tonsils, and 1 for tumor of the nasal septum. Of the 5 deaths in this series, 2 were due to heart failure, and 3 to pneumonia. Hence, even local anesthesia is not a positive protection against pulmonary complications. But Härtel, like Braun, is very optimistic as to the future of local anesthesia in this field and believes it will lend a much less dangerous aspect to many otherwise serious and radical operations.

Härtel, however, has gone still farther and has blocked the Gasserian ganglion itself for anesthetic purposes in cranial operations, according to the technique previously described under the section on trigeminal neuralgia. He uses a 2 per cent. solution of novocain-suprarenin in doses varying between ½ and 1½ c.c. The entire area supplied by the trigeminal nerve on the other side where the injection is made is rendered immediately anesthetic, and usually remains thus for one and a half hours, allowing time for the most intricate operative procedures. When necessary, both ganglia may be injected, as Härtel has done in 9 of his cases, making the entire trigeminal region insensitive. He has made use of this method of anesthesia in 16 operations; (1) extirpation of the Gasserian ganglion, 6 resections of the upper jaw, 2 operations for carcinoma of the tongue, 2 operations on the orbit, 2 tumors of the nasopharyngeal space, 1 plastic operation on the face, 3 operations on the jaw. In both cases of carcinoma of the tongue, some pain was experienced when the tongue was separated from the floor of the mouth, and Härtel does not consider that blocking of the ganglion has any advantages over his previous method for this particular procedure. There was some pain during the chiseling process in the 6 resections of the upper jaw, and Härtel recommends, in these cases, a previous injection of morphin, blocking of both ganglia, and anemic injection of the field with novocain-suprarenin. In the other cases the anesthesia was complete.

Braun's wheal method of obtaining perfect hemostasis in cranial procedures renders the field not only bloodless, but anesthetic as well. In his new work on local anesthesia Braun describes at length his technique of infiltration anesthesia for various cranial procedures, including extirpation of tumors of the scalp, an extensive resection of the skull with repair of dural defect, besides various operations on the cerebellum, the ear, orbit, neck, etc. He finds that patients have no

pain during the operation on the brain and skull, though the chiseling is very unpleasant when the skull has to be resected and the disagreeable sensation should be mitigated by the administration of morphin or scopalamin. He makes a row of wheals about the outer edge of the field of operation, the number depending on the extensiveness of the operation, and, with these as starting-points, he injects, in a practically horizontal plane, the subcutaneous tissue with a ½ to 1 per cent. solution of novocain-suprarenin, the latter being used if the field is large and there is danger of hemorrhage. The amount varies from 10 to 75 c.c. In some parts, especially in the temporal region, the sensory innervation is situated almost exclusively in the deep-lying tissues. When this is true, the simple circular subcutaneous injection is entirely ineffective. It is necessary to introduce the needle vertically down to the bone, then from the same wheal to introduce the needle several times at various angles so that all the layers of the periosteum, fascia and scalp will be reached. This is often done at two points at opposite ends of the incision about to be made. For brain puncture, a single injection of a few cubic centimeters of novocain-suprarenin at the site of puncture is usually sufficient.

Andree (*Munch. med. Woch.*, 1913, No. 10) has recently reported an operation performed by Mertens, of Bremen, under local anesthesia, for the removal of an endothelioma of the dura the size of a small fist, situated in the falx cerebri. Three-quarters of an hour before the operation the patient was given 0.01 morphin subcutaneously. The field of operation was then injected, according to Braun's technique, with a 1 per cent. solution of novocain-suprarenin, and larger injections made in the auricotemporal and occipital nerves. The patient felt no pain during either stage of the operation, and made a good recovery.

This, Frazier believes, is a very fair test as to the efficiency of local anesthesia in cranial procedures on account of the extensiveness of the operation and the manipulations of the brain substance required by the extraordinary size of the tumor. No painful sensations were experienced even when the dura was incised.—(*Progressive Medicine*, March, 1914.)

The Reduction of Fractures Under Local Anesthesia.

Dollinger reduces simple fractures of the extremities under the control of the fluoroscope or skiagraph and fixes them immediately by a plaster cast. Recently he has added the use of local anesthesia. The anesthetic employed was novocain-suprarenin solution, and was injected either between the fragments or around the limb above the fracture. In using the first method he established the site of fracture by the *x*-rays, and then injected 10 to 20 cc. of a 1 per cent. novocain-suprarenin solution exactly between the fragments. Unless this is accomplished, complete success will not be attained. Anesthesia is obtained within five to ten minutes, after which the fragments can be manipulated without pain. This method has the following disadvantages: (1) The usual acute tenderness at the seat of fracture makes the introduction of the needle very unpleasant; (2) the blood clot between and around the fragments may prevent the anesthetic fluid from coming into direct contact with the nerves, while it may find its way into the open vessels and cause toxic symptoms; (3) the exact location of the fracture may be very difficult in fat people or in the presence of hematoma formation, so that the placing of the fluid between the fragments may be difficult. These disadvantages probably explain why this method has not received general support. The circular injection method gives much better results. After disinfection of the skin with tincture of iodin, the whole circumference of the limb is injected about four fingers' breadth above the fracture. If there is a large hematoma, the injection may be made higher, even 10 to 20 cm. above the fracture and above the hematoma. First the skin and subcutaneous tissue are infiltrated, and then the deeper layers until the whole thickness of the limb is infiltrated. As few punctures as possible should be made. For the leg three or four are sufficient, for the thigh four or five, and for the forearm two. In about ten minutes after the infiltration there will be complete anesthesia peripheralward, and the reflex muscle spasm will be overcome. The fracture can then be manipulated without pain. The ease with which the reduction can be accomplished without muscle spasm is striking. Dollinger would restrict the use of the first method, or injection between the fragments, to those cases in which the circular method of anesthesia is impracticable because of the anatomical situation of the fracture, as in fracture of the clavicle, pelvis, vertebræ and ribs.—(*Zent. f. Clin.* No. 40, 1913, *by Am. J. Med. Sci.*)

Local Anesthesia for Hernia Operations.

J. H. Jacobson says that the history of modern local anesthesia is practically that of the evolution of cocain and allied drugs. The earlier efforts at local anesthesia with cocain were often attended by severe toxic symptoms and in some instances by death. A reduction in the amount of cocain necessarily followed, until very small doses were employed. Much credit is due to Schleich of Berlin, who perfected the infiltration method of local anesthesia, using minute doses of cocain in combination with morphin.

Clinical experience, as well as much experimental evidence, has shown that of the newer preparations, novocain is less irritating to the tissues, and less toxic than any other drug. When used alone novocain is fleeting in its action, but when used with adrenalin its action is prolonged. It can be safely used in large quantities and therefore makes good anesthesia more certain.

Local anesthesia in abdominal surgery finds its greatest application in hernia operations. By many surgeons it is now considered the anesthetic of choice. Its use for hernia operations is always indicated in the aged, or in the presence of severe organic diseases, such as cardiac lesions and diseases of the lungs, liver and kidneys. It is particularly indicated in strangulated hernia.

It is well known that only a small percentage of patients with hernia are operated, and that deaths from strangulation are not uncommon. Many patients have expressed themselves as feeling assured that the operation itself is curative and without danger, but do not care to risk anesthesia with ether or chloroform. Patients readily consent to hernia operations when informed that it can be done without pain and without a general anesthetic. Operations for inguinal hernia can be performed just as thoroughly under local anesthesia as with a general anesthesia. This is also true of umbilical hernia in patients who are not too obese.

The solutions of novocain and adrenalin employed range from ½ to 2 per cent. The quantity of the solution to be employed varies with each operation. According to Braun, as much as 200 c.c. of a 1 per cent. solution has been used by Axhausen, although the average amount is only 50 to 60 c.c.

It is absolutely essential that fifteen to twenty minutes

elapse from the completion of the injections to the beginning of the operation. Attempts to operate before the expiration of the amount of time will be met with failure. Jacobson has successfully performed thirty-six operations upon twenty-eight patients, eight of these being operated for double hernia.—(*Am. Jour. Obst.*, Nov., 1913.)

The Two-Stage Operation.

G. W. Crile says the safety of certain operations, especially those for cancer of the rectum, stomach, large intestine, uterus, larynx, and the tongue, is increased by performing the operation in two stages. The first stage prepares the way for the safer second stage especially in a weakened patient; and the danger of reimplantation of cancer-cells is lessened. The general advantages of the two-stage operation are greatly increased by the employment of nitrous oxide-oxygen anæsthesia and the general technique of anoci-association.

In cases of cancer of the rectum, a preliminary colostomy prepares the way for the major operation. In cancer of the stomach gastro-enterostomy is first performed, the balance of the operation being deferred until the intestinal balance is assured. In cases of uterine cancer the danger of a fatal reimplantation of cancer-cells is obviated by a preliminary destruction of the cancerous growth by cauterization. The manifold dangers attending laryngectomy are lessened or obviated even by a preliminary tracheotomy at which time the deep planes of the neck are packed with iodoform gauze. The resultant local reaction fixes the trachea, protects the mediastinum, and eliminates the danger of vaginitis. The author discusses also the advantages of the two-stage operation for cancer of the tongue and for acute abdominal infections. In exophthalmic goiter a three-stage operation may even be necessary to control the hyperthyroidism and restore the psychical as well as the physical balance of the patient.

In general it may be said that the two-stage operation under anoci-association gives the surgeon his maximum opportunity for lessening the operative mortality rate in many of his greatest surgical risks; thus the surgeon may triumph over surgical difficulties by strategically dividing his forces. In the author's own personal experience the mortality rate of cancer cases has been diminished 50 per cent. by the employment of the two-stage operation.—(*Tr. Am. Surg. Ass.*, N. Y., April, 1914.—By *Surg., Gynec. & Obst.*)

Clinical Congress of Surgeons.

The 1914 Congress will meet in London July 27 for one week. A notable gathering of surgeons and surgical specialists will be in London to witness the British surgeons as they exhibit their surgical skill in their own institutions. The wonderful interest that has been engendered in these Congresses in Chicago, Philadelphia, and New York on the part of American surgeons will be greatly heightened when they have the opportunity to stand shoulder to shoulder with their English and Continental confrères and observe the London clinical methods. During the days of the Congress the clinics by eminent London surgeons will be observed by many visitors from America, Canada, the Continent, and the Provinces. At the evening sessions the scene will be changed, when the celebrated surgeons of the Continent, America, Canada, and the Provinces will reciprocate by furnishing the scientific entertainment to the members of the Congress and to the London surgeons, delivering messages on the live surgical questions of the day. The work of organization is progressing rapidly and by the time the Congress is opened a considerable portion of the clinical facilities of London will be available to the visiting surgeons. London is a great post-graduate center in medical instruction and training, and no doubt many of the younger visiting surgeons upon discovering the advantages to be gained by attending the London clinics will take this occasion to make arrangements for more formal and prolonged courses.

The headquarters of the Congress are ideal. The embankment suites of entertainment halls of the capacious Hotels Cecil and Savoy, located side by side in the hospital center of London, have been secured for the registration rooms, exhibition halls, and evening meeting rooms. Over 500 clinics of every branch have been arranged.

The Physician's Library

Surgery; Its Principles and Practice. For Students and Practitioners. By Astley Paston Cooper Ashhurst, M.D., F.A.C.S., Instructor in Surgery in the University of Pennsylvania. Cloth, 1141 pages, with 7 colored plates and 1032 illustrations, mostly original, $6.00 net. Philadelphia and New York: Lea & Febiger, 1914.

In this day of many books on surgery, one instinctively asks the *raison d'etre* for another.. This book follows generally accepted lines of surgical technique, but possesses an individuality that makes it different. It is written with great attention to phraseology and to exactness of detail. It presents not only voluminous descriptions of operative procedure, but a sufficient amount of pathogenesis and indicative measures. Under the general headings of general, systemic and regional surgery, the author covers in a satisfactory manner the entire range of surgery. He possesses a charm of expression, marked with extreme simplicity, which characterizes the volume and makes it really distinctive. Added to the wealth of clinical text is a wealth of original illustrations which add 100 per cent. to the value of the book.

The author's introduction to the profession as the writer of a large and important work is certainly auspicious.

Recent Studies of Tuberculosis. Special tuberculosis numbers of the *Interstate Medical Journal* (March and April, 1914), now issued in book form; heavy paper cover. 300 pages. Frontispiece and other illustrations. Price, $1.50. St. Louis: Interstate Medical Journal Company, 1914.

This publication affords one a post-graduate course in tuberculosis that is fascinating as well as edifying, owing, it would seem, to the rare powers of selection of the editor, Dr. Philip Skrainka, who has judiciously arranged the forty-one articles by forty-four authors so that one gets medical, sociologic and literary aspects in most interesting succession. To him the outstanding merits of the series are chiefly due.

From among so many articles of seemingly uniform excellence it is hardly possible to select any for special note. He who is interested in the general subject of tuberculosis will find each article dealing with one phase

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of the wide field with "minute specialization of knowledge," and will find, after a perusal of them all, that no facet of our knowledge of this disease has been untouched by some one of the writers. No better symposium has ever been published on any subject.

The Piorkowski turtle tuberculin is conservatively discussed, but heliotherapy seems the most brilliant in therapeutic achievement, though necessarily limited in application, of any measure thus far employed in the treatment of tuberculous bones and joints. The pictures of children "before" and "after" are a joy.

This symposium ought to convince everyone but the croakers that an enormous amount of effort of the highest grade is being brought to bear upon the tuberculosis problem, and that this effort is proving effective. It is to be borne in mind that the tuberculosis crusade did not begin in this country until about 1907. Captious critics seem to assume that the campaign began simultaneously with the discovery of Koch. Rosenberg gives Herman M. Biggs credit for starting measures in New York as early as 1894, but this exhibition of enlightenment was local. Why the death-rate is not lower than it is is no great mystery when one reflects that the campaign is only seven years old.

We extend our congratulations to the *Interstate* for its wholly adequate revelation of the medical and sociologic status of tuberculosis in the present year of grace and in all countries; we strongly counsel our readers to provide themselves with this authoritative record of achievement to date, and, in such articles as that of Wells, of Chicago, find glorious promise of the future.

Progressive Medicine. Edited by Hobart A. Hare, M. D., of Jefferson Medical College. Vol. XVI, No. 2, June. Philadelphia: Lea & Febiger, 1914.

This volume of this most valuable quarterly contains the following delectable array: Hernia, by William B. Coley; Surgery of the Abdomen, exclusive of Hernia, by John C. A. Gerster; Gynecology, by John G. Clark; Diseases of the Blood: Diathetic and Metabolic Diseases: Diseases of the Thyroid Gland, Spleen, Nutrition, and the lymphatic System, by Alfred Stengel; Ophthalmology, by Edward Jackson.

This feast, setting forth the last word on the subjects, is worthy the careful attention of every physician.

Health Through Diet. By Kenneth G. Haig, L. R. C. P. of London. Cloth, 225 pages. Philadelphia: J. B. Lippincott Company, 1914.

This little book is the story of uric acid free diet, what it is and what it will do. He does not permit meat, fish, fowl, egg yolk, no peas, beans, oatmeal or wheat meal, and no tea, coffee or cocoa. He does permit cheese, milk, gluten, nuts, rice and cereal foods, fruit and vegetables. Many will disagree with Haig's findings, but he advances some interesting theories, which might be carried out to advantage. There are many diet tables which will aid one in arranging a proper diet.

The Operating Room and the Patient. By Russell S. Fowler, M. D., Chief Surgeon, First Division, German Hospital; Surgeon Methodist Episcopal Hospital, Brooklyn. Cloth, 611 pages, with 212 illustrations. Third edition. $3.50 net. Philadelphia and London: W. B. Saunders Company, 1913.

The book has 23 chapters devoted to: The Operating Room; Preparation of Instruments and Supplies; Bandaging; Anesthesia; Pre-Operative Preparation and the Primary Dressing; General Considerations in the After-Treatment; Care of the Wound; Hemorrhage; Complications of Wound Infections; Complications the Result of Antiseptics, Complications the Result of Pressure, Circulatory Complications; Operations Upon Special Tissues; Operations Upon the Head, Neck, Thorax, Abdomen, Rectum and Anus; Extraperitoneal Operations upon the Kidneys and Ureters; Operations Upon the Bladder, the Male Genitals, the Female Genitalia and the Vertebral Column; Lists of Instruments and Dressings Commonly Employed.

A vast deal of information is contained in these chapters, much of which is untaught in the schools and can only come through the personal experience of the operator.

Every essential is presented in clear, concise language and the whole is thoroughly and systematically treated.

Without fear of contradiction it can be said that this book will earn an enviable place in surgical literature.

Practical Sanitation. By Capt. Fletcher Gardner, M. D., of the Indiana National Guard, and Jas. P. Simonds, M. D., Professor of Preventive Medicine in the University of Texas. Cloth. 403 pages. Illustrated. $4.00 net. St. Louis: C. V. Mosby Company, 1914.

Health officers, for whom this work was designed, will find it of value. It is written by practical men, and has practicality written all over it. The book endeavors to tell the health officer just how to act in every emergency, and it does it well. The volume is stripped of all frills, and, as a matter of fact, up-to-date work on the duties of the health officer, is a success.

Infections of the Hand. A Guide to the Surgical Treatment of Acute and Chronic Suppurative Processes in the Fingers, Hand and Forearm. By Allen B. Kanavel, M. D., Assistant Professor of Surgery in Northwestern University Medical School. 2nd edition. Cloth. 463 pages, with 147 illustrations. $3.75 net. Philadelphia and New York: Lea & Febiger, 1914.

The second edition is better than the first, and that was one of the most useful volumes which has come to the reviewer's attention. The physician comes in contact with a wide variety of injuries to the hand, and the necessity of a book treating this particular part is consequently apparent. Injuries of the hand are taken up systematically and logically, and they are handled in admirable fashion. For result giving we feel that this book should be carefully read.

The Clinics of John B. Murphy, M. D., at Mercy Hospital, Chicago. Volume III., No. II. 213 pages, 55 illustrations. Published bi-monthly. Price per year, paper, $8.00; cloth, $12.00. Philadelphia and London: W. B. Saunders Company, 1914.

An interesting feature of this number is the diagnostic wheel, a diagramatic idea for perfection in diagnosis. It serves to fix diagnostic fundamentals in the mind of the examining physician. The clinics cover a variety of subjects, affections of the pancreas, gall, bladder, kidney and bladder, duodenal ulcer and neuroma among others. Drs. Nix and Bremerman gave enlightening talks in connection with different cases. As usual, the number is practical and valuable.

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BOOKS RECEIVED.

All books received will be acknowledged in this column, and those which warrant further notice will be given a more extended review in a later issue.

Bacteriology for Nurses. By Isabel McIsaac, R. N. Cloth, 178 pages, illustrated. $1.25. Published in 1914 by the Macmillan Company, New York.

Blood Pressure in Medicine and Surgery. By Edward H. Goodman, M. D., Associate in Medicine in the University of Pennsylvania. Cloth, 226 pages, illustrated. $1.50 net. Published in 1914 by Lea & Febiger, Philadelphia and New York.

Radium and Radiotherapy. Radium, Thorium and other Radio-Active Elements in Medicine and Surgery. By William S. Newcomet, M. D., Professor of Roentgenology and Radiology, Temple University, Medical Department; Physician to the American Oncologic Hospital. Cloth, 315 pages, with 71 illustrations and one plate. $2.25 net. Published in 1914 by Lea & Febiger, Philadelphia and New York.

Materia Medica for Nurses. By A. S. Blumgarten, M. D., Instructor in Materia Medica at the German Hospital Training School for Nurses, New York. Cloth, 644 pages, illustrated. $2.50 net. Published in 1914 by the Macmillan Company, New York.

Black's Medical Dictionary. By John D. Comrie, M. A., M. D., F. R. C. P. Edinburgh, Lecturer on History of Medicine, University of Edinburgh, etc. 858 pages, illustrated. $2.50 net. Published in 1914 by the Macmillan Company, New York; Adam and Charles Black, London.

Practical Therapeutics. By Daniel M. Hoyt, M. D., formerly Instructor in Therapeutics, University of Pennsylvania; Assistant Physician to the Philadelphia General Hospital. 426 pages, illustrated. Published in 1914 by C. V. Mosby Company, St. Louis, Mo.

Serology of Nervous and Mental Diseases. By D. M. Kaplan, M. D., Director of Clinical and Research Laboratories of the Neurological Institute, New York City. Octavo of 346 pages, illustrated. $3.50 net. Published in 1914 by W. B. Saunders Company, Philadelphia and London.

Diseases of the Heart. By John Cowan, D. Sc., M. D., F. R. F. P. S., Professor of Medicine, Anderson's College Medical School; Lecturer in Clinical Medicine in the University of Glasgow; Examiner in Medicine, Royal Army Medical College. 458 pages, with 199 illustrations. $4.00 net. Published in 1914 by Lea & Febiger, Philadelphia and New York.

Collected Papers by the Staff of St. Mary's Hospital (Mayo Clinic) for 1913. 819 pages, 335 illustrations. $5.50 net. Published in 1914 by W. B. Saunders Company, Philadelphia and London.

Diseases of the Skin. By George Thomas Jackson, M. D., Professor of Dermatology in the College of Physicians and Surgeons of Columbia University, New York. 770 pages, with 115 illustrations and 6 colored plates. $3.00 net. Published in 1914 by Lea & Febiger, Philadelphia and New York.

Psychanalysis: Its Theories and Practical Application. By A. A. Brill, M. D., Chief of Clinic of Psychiatry and Clinical Asistant in Neurology, Columbia University Medical School. 393 pages. $3.00 net. Published in 1914 by W. B. Saunders Company, Philadelphia and London.

THERAPEUTIC MEMORANDA.

The Treatment of Milk for Infant Feeding.—Von Dungern's process for treating milk by means of pegnin is designed to prevent the deleterious clotting of the cheese making materials in the stomach. The large curds which otherwise form when milk first reaches the stomach are, by means of this process, formed outside of the body, and can then be speedily reduced by shaking and stirring. The casein of milk so treated is finely divided when taken, is therefore easily digested, and is well adapted for nursing children.

Milk treated with pegnin is free from deleterious germs, and contains nothing which interferes with digestion.

Directions for use: All bottles and stoppers are to be well cleansed by boiling.

The milk required for the day is immediately upon delivery placed in a large glass bottle; the bottle should not be quite full. This is placed in a vessel containing cold water, and the water raised to the boiling point, which should be continued for half an hour. Milk for infants should not be diluted with water at this stage.

After boiling, the milk is cooled to about 40°C or 104°F. This cooling should be done gradually in order to prevent the breaking of the bottle. If the milk becomes colder than 104°F it is warmed again to this temperature.

To each quart of milk is added five measures of pegnin, a measure being supplied with each bottle, or one measure full to each 8 ounces of milk. After the powder has been well mixed by shaking the milk for a short time, a delay should take place sufficiently long for the milk to coagulate. This takes place within a few minutes, usually two or three. Should the milk not coagulate promptly it is highly probable that water has been added to it.

After the milk has coagulated the bottle is closed with a clean stopper, preferably glass or rubber, thoroughly shaken for a few minutes, or until all the clots have completely disappeared.

The milk is now ready for use. It must not be again strongly heated. If dilution with water is necessary, as with very young children, it should be done at this stage, but not more than an equal volume of water should be used for dilution. Boiled water, of course, is preferable for this purpose.

Milk thus prepared is kept in a well stoppered bottle in a cool place until required, when it is again shaken, put into the feeding bottle and warmed to 99°F, and given to the child.

The warming of the milk to the body temperature is best done by holding the bottle in lukewarm water. Stronger heating causes the finely divided curds to clot again. Milk must be again shaken in the feeding bottle.

There are very many instances when the food of a child does not seem to answer the purpose. Despite all the intelligent care of the attending physician, the child shows subjectively and objectively that its food supply is not furnishing sufficient nourishment.

In this class of cases the physician can well turn to pegnin as it often gives the little patient exactly what nature demands.

Pegnin is handled in this country by the Farbwerke-Hoechst Co. of New York, and can be obtained through any wholesale druggist.

JULY CLINICS, DEPARTMENT OF PUBLIC CHARITIES.

MONDAYS.

City Hospital—		
Neurology	Dr. Steinach	3:00 P.M.
Randalls Island Hospital—		
Laryngology, Rhinology and Otology	Dr. Yates	9:00 A.M.
Cumberland Street Hospital—		
Laryngology and Rhinology	Dr. Stewart	4:00 P.M.
Surgery, Oral	Dr. Shea	4:30 P.M.
Kings County Hospital—		
Gynecology	Dr. McNaughton	9:00 A.M

TUESDAYS.

City Hospital—		
Gynecology	Dr. Stearns	2:00 P.M.
Surgery	Dr. N. W. Green.	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Byrne	9:00 A.M.
Cumberland Street Hospital—		
Gynecology	Dr. Burnham	1:00 P.M.
Ophthalmology and Otology	Dr. Warner	3:00 P.M.
Surgery	Dr. Iler	3:00 P.M.
Kings County Hospital—		
Obstetrics	Dr. Commiskey	10:00 A.M.
Surgery	Dr. Barber	11:00 A.M.
Genitourinary Surgery	Dr. Fraser	2:00 P.M.
Coney Island Hospital—		
Surgery	Drs. Fiske and Bogart	10:30 A.M.
Surgery	Drs. Murphy and Lack	10:30 A.M.
Medicine	Drs. Hall and Nash	3:30 P.M.
Medicine	Drs. Hegeman and Byington	3:30 P.M.

WEDNESDAYS.

City Hospital—		
Obstetrics	Dr. Shears	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Maloney	10:00 A.M.
Kings County Hospital—		
Orthopedics	Dr. Truslow	10:00 A.M.
Orthopedics	Dr. Napier	4:00 P.M.
Coney Island Hospital—		
Pediatrics	Drs. Beck and McQuillan	3:30 P.M.
Pediatrics	Drs. Pendleton and Van Wart.	3:30 P.M.

THURSDAYS.

City Hospital—		
Surgery	Dr. N. W. Green..	2:00 P.M.
Cumberland Street Hospital—		
Gynecology	Dr. Burnham	1:00 P.M.
Surgery	Dr. Walmsey	3:00 P.M.
Laryngology and Rhinology	Dr. Stewart	4:00 P.M.
Kings County Hospital—		
Obstetrics	Dr. Commiskey	10:00 A.M.
Otology	Dr. Alderton	1:00 P.M.
Surgery	Dr. Barber	2:00 P.M.
Coney Island Hospital—		
Gynecology	Drs. McEvitt and Mills	1:30 P.M.
Gynecology	Drs. Mayne and Rankin	1:30 P.M.
Rhinology and Laryngology	Dr. Tucker	1:30 P.M.
Surgery	Drs. Fiske and Bogart	3:00 P.M.
Surgery	Drs. Murphy and Lack	3:00 P.M.

FRIDAYS.

City Hospital—		
Ophthalmology	Dr. Wiesner	9:00 A.M.
Laryngology and Otology	Dr. Dougherty	2:00 P.M.
Neurological Hospital—		
Neurology	Dr. Abrahamson.	9:00 A.M.
Cumberland Street Hospital—		
Ophthalmology and Otology	Dr. Warner	3:00 P.M.
Surgery	Dr. Iler	3:00 P.M.
Surgery, Oral	Dr. Shea	4:30 P.M.
Kings County Hospital—		
Gynecology	Dr. McNaughton.	9:00 A.M.

Placing the Blame.

Much discussion is being heard concerning the role of the intestinal canal in the causation and development of innumerable diseases. Once the liver was the chief malefactor. How natural to turn to the liver's closest associate, the intestinal tract! Thus it is that the "human cesspool," as Sir W. Arbuthnot Lane has styled the intestinal canal, has had to stand accused of the etiologic crimes that the liver is no longer held accountable for. Recent study of intestinal stasis and associated conditions has shown that the liver is often the main culprit even in this affection. The action of the bile in controlling intestinal putrefaction, arresting bacterial activity, promoting peristalsis, and assisting digestion makes it highly necessary that this important secretion be frequently interrogated as to its quantity, and any decrease in the bile output be given instant and vigorous attention.

This naturally raises the question, what is the best and most effect cholagogue? Experience has shown many men that for promoting the functional activity of the liver nothing is superior to Chionia. This is an exceedingly effective preparation of Chionanthus Virginica. Administered in proper dosage, it is a powerful hepatic stimulant, increasing the flow of bile, without, however, producing the marked and extreme catharsis which makes so many other hepatic remedies highly objectionable.

Acute enterospasm is a condition exceedingly difficult to diagnose from true obstruction. It is caused by an acute spasmodic contraction of one or more coils of intestine.

The Constant Need for An Effective Tonic.

In instituting treatment for derangements of the system and lowered vitality, which constitute so much of the physician's work, he seeks to stimulate faltering functions, increase the activity of weakened organs and restore all the energy he can to the whole organism. To produce permanent results requires a remedy that possesses tonic and reconstructive properties.

Among those that have been found especially capable of up-building the body and accomplishing changes permanent in character, Gray's Glycerine Tonic Comp. has long enjoyed a high reputation. The reason for this popularity is found in the remarkable efficiency of the product, for when properly administered it is a dependable means of effecting prompt and substantial results in atonic indigestion, gastro-intestinal catarrh, chronic bronchitis, incipient tuberculosis, neurasthenia, nervous disorders in general, and wherever an efficient restorative and reconstructive is needed. For over sixteen years "Gray's" has been at the command of the profession and thousands of physicians derive genuine satisfaction from its use because they have found it one of the few remedies that measures up to all that the word tonic means

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Hay Fever, both acute and chronic, is being successfully combatted with Respirazone. Those of the profession not familiar with the article may obtain a free sample by writing to The Tilden Company, New Lebanon, N. Y., or St. Louis, Mo. This is one of the very reliable prescriptions in Hay Fever and Asthma, and has rendered valuable service.

A High-Potency Diastase.

The doubling of the liquefying power of Taka-Diastase, through recent improvements in the process of manufacture, as announced by Parke, Davis & Co., lifts this agent into a position of commanding eminence as a diastasic ferment. So potent is this improved diastase that in ten minutes, under conditions of temperature and moisture corresponding to those existing in the normal stomach, it will liquefy three hundred times its weight of starch.

For the information of physicians who are unfamiliar with its nature and origin, it may be said that Taka-Diastase is obtained from the fungus Aspergillus oryzae, which from time immemorial has been used in Japan for the saccharifying of rice. This fungus contains not merely an amylase, but a mixture of various enzymes. It possesses amylolytic power to a much greater degree than any of the other species of the Aspergillus family.

Taka-diastase is serviceable in the treatment of amylaceous dyspepsia, in chronic gastritis, in hyperacidity, in the vomiting of pregnancy, in infantile diarrhea and dysentery. It may be prescribed in liquid, powder, tablet and capsule forms, also in combination with other agents in capsules and tablets. It should be taken during or immediately after meals in order that it may act upon the starches in the stomach before the acid wave sets in.

The great method of disease prevention is to maintain at their highest possible efficiency the resistive powers of the body.

The Maggot Trap and the Fly Problem.

A trap to destroy the maggots of the typhoid or housefly before they develop into winged insects is a possible solution of the fly problem. The Department of Agriculture's scientists, in preliminary experiments with such a trap, have succeeded in destroying from 70 to 99 per cent. of the maggots in a pile of manure. The maggots of the typhoid fly, it has been discovered, have a habit of migrating from their breeding places into drier portions of the manure heap. This seems a distinct move on their part to permit the adult fly to issue from the refuse in the easiest and quickest manner.

A large galvanized iron pan, 5 by 3 feet, with sides 4 inches high, was made. In this stood a container on legs 8 inches high. This container measured 4 by 2 by 2 feet. The sides and bottom were of heavy wire, ¼-inch mesh, supported by a light wooden framework. Twelve cubic feet of manure well infested with eggs and larvae were placed in this container and sprinkled with water. Water was also poured into the pan below to the depth of about 1 inch. Surrounding and covering both pan and container was a fly-tight inclosure made of a large cage, 6 by 6 by 6 feet. This prevented further infestation of the manure, and an arrangement of traps at the top of the cage made it possible to capture and keep a record of any flies that might emerge. At the time for the emergence of flies the sides of the cage were darkened with black cloth in order to drive the flies into the traps at the top. Each day the maggots were collected from the pan and counted, and each day the manure in the container was sprinkled thoroughly with water and the pan was washed out and again partly filled with water to drown the larvae which fell into it.

The experiments of the entomologists showed that from 98 to 99 per cent. of all the maggots in the manure pile were destroyed, if the manure was kept moist. From comparatively dry manure about 70 per cent. were destroyed.

These experiments, as yet, have been tried only on a comparatively small scale. The question immediately arises whether the trap which appears so successful on a small scale can be adapted to the handling of manure in a practical way on a large scale.

Cramps of Cholera Morbus.

The heated season, with its following train of stomach and intestinal diseases, emphasizes the proven value of Hayden's Viburnum Compound in cramps of cholera morbus and muscular cramps.

H. V. C. is compounded only from selected material, depending for its therapeutic efficiency upon the recognized value of Viburnum Opulus and Dioscorea Villosa, combined with Aromatics.

Dr. Torald Sollman, in his text book, "Pharmacology," page 510, recommends Viburnum Opulus in muscular cramps.

"King's American Dispensatory," page 2059, Vol. 2, refers to this same product in like conditions, and Prof. Potter, in his "Materia Medica, Pharmacy and Therapeutics," page 266, recommends the employment of Dioscorea Villosa in cramps of cholera morbus.

Hayden's Viburnum Compound presents Viburnum Opulus and Dioscorea Villosa in their most refined and active state, and when given in hot water, a pronounced effect will be observed.

Caffein in Coca-Cola.

The modern conception of the physician is vastly different from what it once was. Nowadays the duty of keeping people well is held to be equally important as making them well when they have fallen ill. This attitude entails the necessity for exercising a much closer supervision of the life and habits of those people to whom the physician stands in this relation, and his advice upon such matters as clothing, eating and drinking and personal hygiene is highly respected—even if not always followed.

Such being the case there must be a number of physicians who are asked for their opinion of Coca-Cola. The controversy which has been stirred up over this most popular of all summer beverages is of great interest to the whole medical profession.

Coca-Cola has had to pay the price of unusual success and undergo several illogical and ill-tempered attacks. It has been called poisonous, its chief constituents were said to be alcohol and cocaine—it was spoken of as dangerous and habit-forming in its effect. These contentions have all been met and refuted, *completely and emphatically,* and, casting about for another peg to hang an argument upon, the subject of caffein has now been brought up. Caffein, as all physicians know, is the property that gives to tea and coffee the beneficial, fatigue-relieving and refreshing qualities that have established them in almost universal use for thousands of years.

Coca-Cola is composed of nothing but pure water, refined sugar, fruit flavor and a minute quantity of caffein—less caffein to a glass than is contained in a cup of either tea or coffee. The physiological action of caffein has been closely studied and the most exhaustive tests carried out upon human subjects for the purpose of discovering exactly what effect it has upon the organism. The general conclusions arrived at by the investigators, men of sound standing and international repute, can be condensed into two brief statements, viz.:

1st. The general effects of caffein upon the mental and motor processes is one of stimulation. Increased capacity for work is plainly demonstrated.

2nd. In none of the experiments is there any trace of secondary depression of reaction effects.

Acute Dermatic Infections.

The further spread of acute dermatic infections and relief of symptoms are secured in the majority of instances by the application of Ecthol (Battle). Thus, in erysipelas it will be found of marked utility, as also in the usual dermatoses caused by contact with poison oak and ivy.

To Obtain Narcotics.

New York physicians should make immediate application to the secretary of the State Board of Health, at Albany, for a supply of official order blanks for the purpose of providing themselves with heroin, morphin, codein, etc., after July 1st, as required in: "Chap. 363, an act to amend the public health law, in relation to the sale of habit-forming drugs."

206 New Members Elected Year Ending May 1, 1914.

American Medico-Pharmaceutical League.—18th annual convention, May 24, 1915. The first medical society in America to admit pharmacists. All desiring to read papers are invited to forward titles. Dues, $2 per annum, initiation fee $1. Physicians, pharmacists and dentists eligible. Eugenie R. Eliscu, M. D., Treasurer, New York City; Samuel F. Brothers, M. D., Corresponding Secretary, 96 New Jersey Avenue, Brooklyn, N. Y.

Pluto Water in Gout and Chronic Rheumatism.

In the treatment of uric acid diathesis, gout and other therapeutically troublesome stages of chronic rheumatism, Pluto Water is unhesitatingly prescribed by practitioners everywhere. Their experience and exhaustive clinical tests have conclusively proven its decidedly superior efficacy in connection with a proper dietetic regimen. Samples, clinical data, analysis and literature, interestingly descriptive of the hygienic methods employed in bottling Pluto will be promptly forwarded on application to The French Lick Springs Hotel Co., French Lick, Indiana.

Impromptu Laboratory Apparatus.

Clayton McPeek, Columbus, Ohio (*J. A. M. A.*) suggests that some expensive laboratory apparatus can be substituted by home-made appliances which are sometimes even more desirable than factory-made supplies. He describes an extension kymograph than can be improvised from two Harvard spring kymographs as a basis, an apparatus for showing respiration and respiratory pressures made from a quart Mason jar; ether cones made from ordinary coarse meshed wire and an improvised tambour made from an ordinary clap pipe.